APPLICATION NOTES

P-SERIES A CONTROL WIRING DIAGRAM AN-1
MS-A WIRING DIAGRAM AN-3
MSY-MSZ WIRING DIAGRAM AN-5
MXZ-2A20NA WIRING DIAGRAM AN-7
MXZ-3A30NA WIRING AN-10
LOW TEMPERATURE HEATING CHART AN-13
P-SERIES TWINNING WIRING DIAGRAM AN-15
MXZ-4A36NA WIRING DIAGRAM AN-17
SI-1730-230 WIRING DIAGRAM AN-20
SI-3100-115 WIRING DIAGRAM AN-22
SI-3100/230 WIRING DIAGRAM AN-24
DRAIN LINE APPLICATIONS AN-25
RATED CAPACITY VS MAXIMUM CAPACITY AN-28
M-SERIES DRY MODE DESCRIPTION AN-30
M&P-SERIES AIR OUTLET COVERAGE RANGE AN-33
M&P-SERIES REMOTE ACCESS AN-36
M-SERIES COOLING CHARTS AN-40
M-SERIES COOLING CAPACITY CORRECTION FACTORS AN-53
M-SERIES COOLING PERFORMANCE DATA AN-55
M-SERIES OUTDOOR UNIT CLEARANCES AN-58
M&P SERIES HIGH ALITITUDE APPLICATIONS AN-67
REGARDING REFRIGERANT ACCESSORIES AN-70
P-SERIES INDOOR FAN CYCLE OFF AN-72
SUPPLEMENTAL HEAT CONTROL AN-74
NO SIMULTANEOUS WITH MXZ AN-81

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P-Series and M-Series - Application Notes (June 2013)
APP-1

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Application Note 1001:

P-Series A Control Wiring Diagram

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Indoor unit power is supplied from the outdoor unit.

*Use of a disconnect at the indoor unit (part# TAZ-MS303) may be required in your jurisdiction.

Use AWG14-3 600 VAC rated copper wiring between outdoor unit and indoor unit for high voltage and control circuits.

P-Series units in a CITY MULTI application may only be grouped with P-Series units.
Refer to the PAR-21MAA-E technical manual for grouping information.

Figure 1 and Figure 2 illustrate available connection patterns.

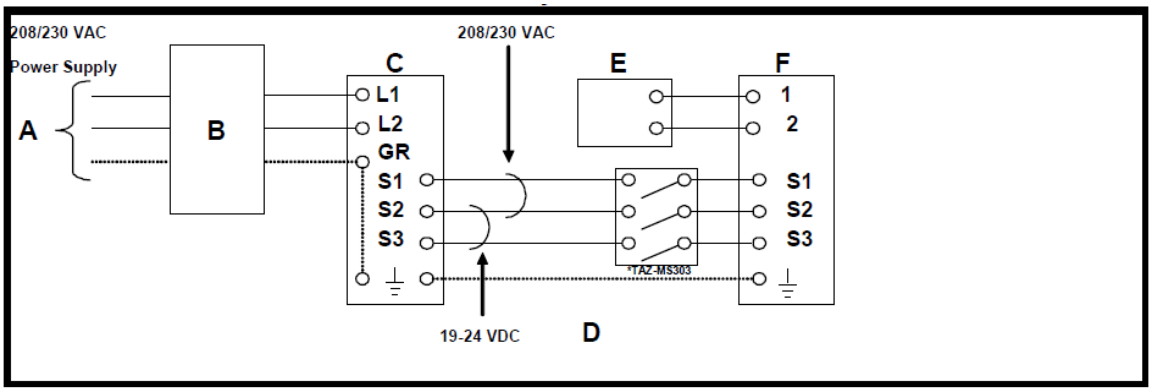

Figure 1. 1:1 System

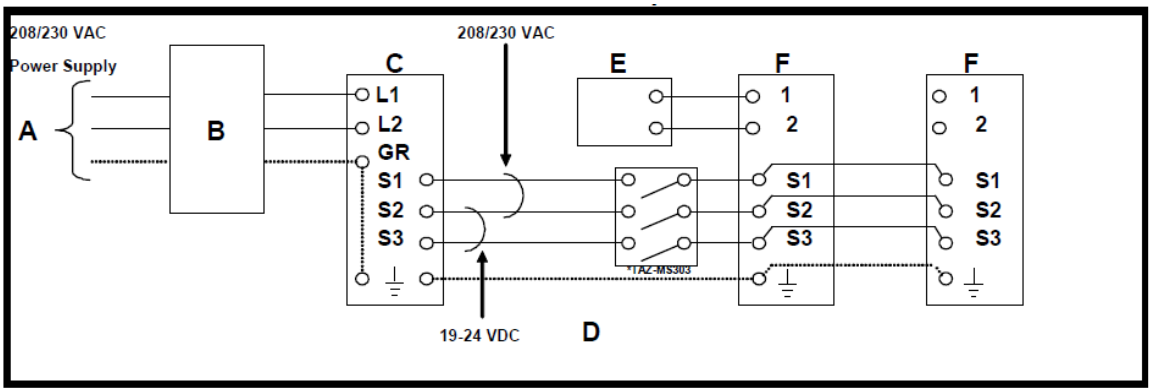

Figure 2. Simultaneous Twin Operation

A= Outdoor unit power supply
B= Wiring circuit breaker or isolating switch
C= Outdoor unit
D= Indoor unit/Outdoor unit connecting wiring
E= Remote Control
F= Indoor unit

Note: All wiring shall comply with NEC and local electrical codes.
Refer to unit installation manual for more details.

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Application Note 1002:

MS-A Wiring Diagram

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1. All MS-A indoor units must be powered from the outdoor unit. (Indoor unit cannot be powered from a separate source)

2. Outdoor unit power is 115 VAC using a two-conductor wire with ground.

3. Indoor unit power is from the outdoor unit from a terminal block marked to the indoor unit.

4. Connect the indoor unit to the outdoor unit on terminals L1, N, 2, and ground. Use copper conductors only.

5. A three pole disconnect switch may be used for shut off or service between the indoor and outdoor unit as shown in Figure 1.

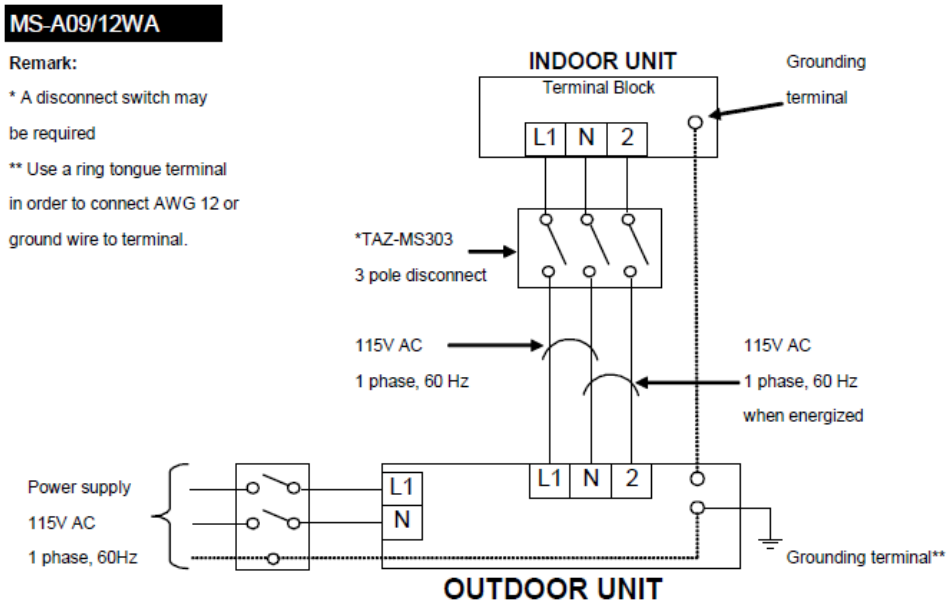


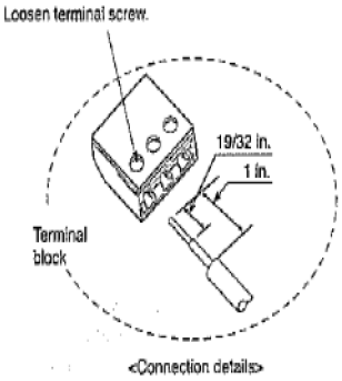
Figure 1. 3 pole switch part # TAZ-MS303

CONNECTING WIRES AND CONNECTING GROUND WIRE

- Use a solid conductor or stranded conductor AWG14.
- Use doubled insulated copper wire with 300 volt insulation.
- Use copper conductors only.
- Follow national and local electrical code.

POWER SUPPLY CABLE AND GROUND WIRE

- Use solid or stranded conductor AWG12** or AWG14 wire.
- Use copper conductors only.
- Follow national and local electrical code.



Note: All wiring shall comply with NEC and local electrical codes. Refer to unit installation manual for more details.

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Application Note 1003:

MSY-MSZ Wiring Diagram

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1. All MSY/MSZ indoor units must be powered from the outdoor unit.
   (Indoor unit cannot be powered from a separate source)

2. Outdoor unit power is 208/230 VAC using a two-conductor wire with ground.

3. Indoor unit power is supplied from the outdoor unit from a terminal block marked S1, S2, S3.

4. Connect the indoor unit to the outdoor unit on terminals S1, S2, S3 and ground. Use copper conductors only.

5. A three-pole disconnect switch may be used for shut off or service between the indoor and outdoor unit as shown in Figure 1.

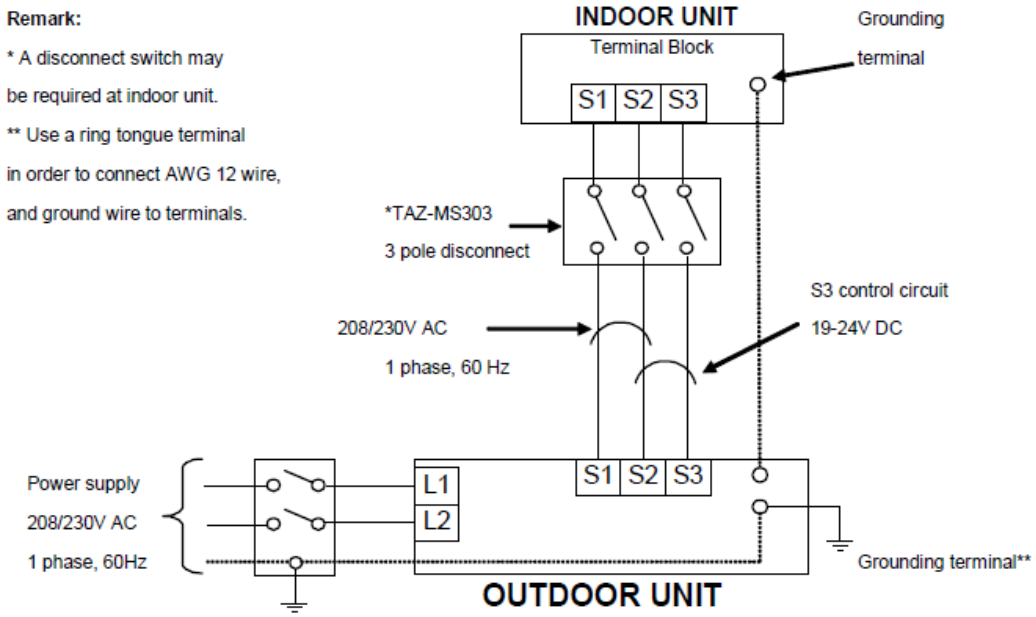


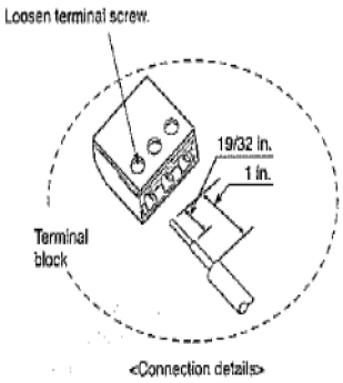
Figure 1. 3 pole switch part # TAZ-MS303

CONNECTING WIRES AND CONNECTING GROUND WIRE

- Use a solid conductor or stranded conductor AWG14.
- Use doubled insulated copper wire with 300 volt insulation.
- Use copper conductors only.
- Follow national and local electrical code.

POWER SUPPLY CABLE AND GROUND WIRE

- Use solid or stranded conductor AWG12** or AWG14 wire.
- Use copper conductors only.
- Follow national and local electrical code.



Note: All wiring shall comply with NEC and local electrical codes. Refer to unit installation manual for more details.

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Application Note 1004:

MXZ-2A20NA Wiring Diagram

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1. All MSZ indoor units must be powered from the outdoor unit.
   (Indoor unit cannot be powered from a separate source).

2. MXZ outdoor unit power is 208/230 VAC circuit using a two-conductor wire with ground.

3. Each indoor unit is powered from the outdoor unit from a terminal blocked marked to the specific indoor unit.

4. Connect the indoor unit to the outdoor unit on terminals S1, S2, S3 and ground. Use copper conductors only.

5. A three-pole disconnect switch may be used for shut off or service between the indoor and outdoor unit as shown in Figure 1.

Remark: *A disconnect switch may be required at the indoor unit. Check the local code.
**** Use a ring tongue terminal in order to connect a ground or AWG 12 wire to terminal block.**

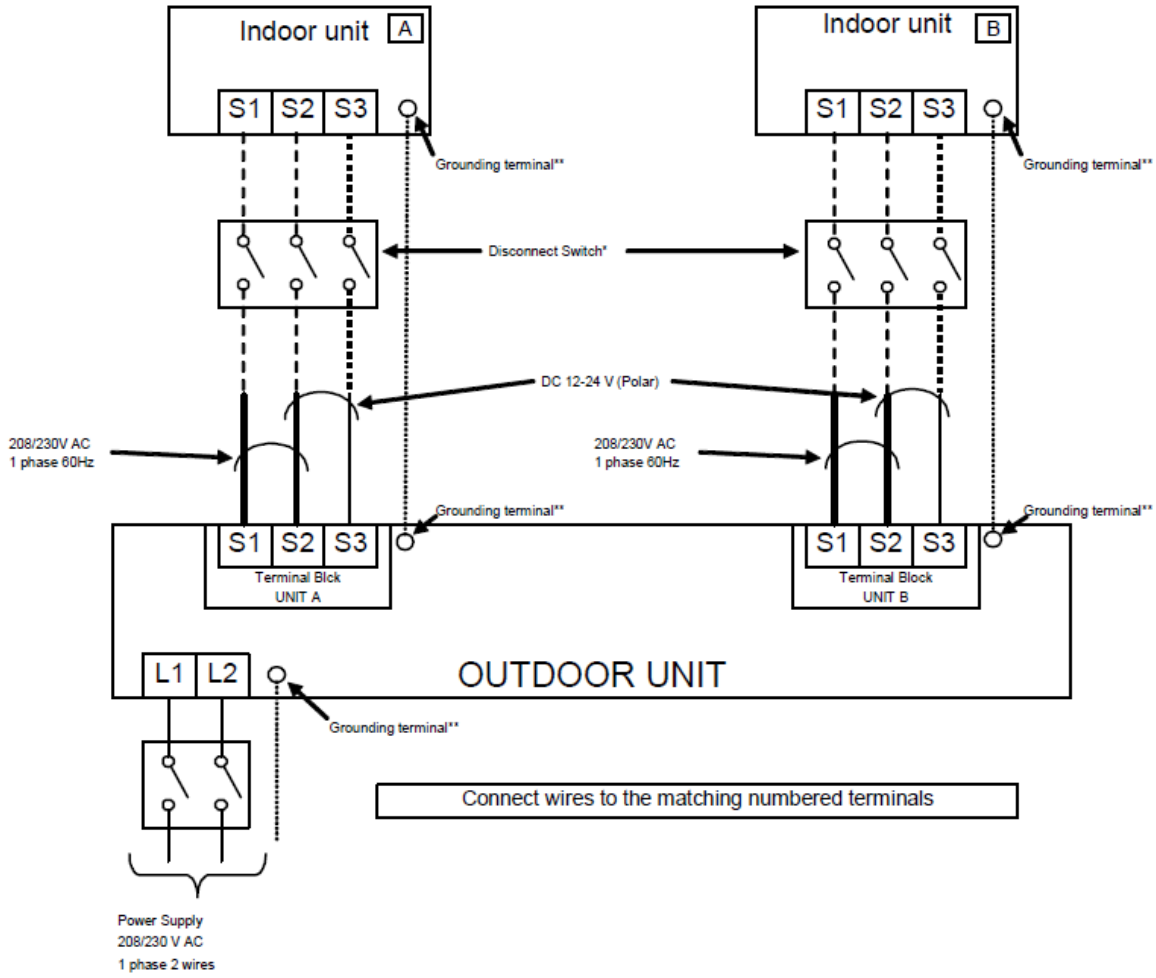

Figure 1. 3 pole switch part # TAZ-MS303

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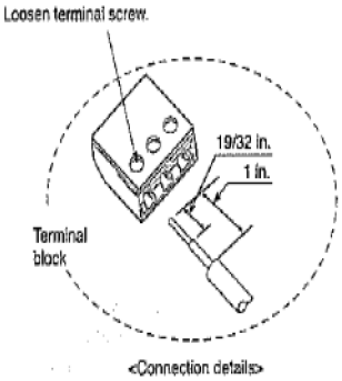
2013 P-Series and M-Series - Application Notes (June 2013)
APP-9

CONNECTING WIRES AND CONNECTING GROUND WIRE

- Use a solid conductor or stranded conductor AWG14.
- Use doubled insulated copper wire with 300 volt insulation.
- Use copper conductors only.
- Follow national and local electrical code.

POWER SUPPLY CABLE AND GROUND WIRE

- Use solid or stranded conductor AWG12** or AWG14 wire.
- Use copper conductors only.
- Follow national and local electrical code.



<Connection details>

Note: All wiring shall comply with NEC and local electrical codes. Refer to unit installation manual for more details.

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Application Note 1005:

MXZ-3A30NA Wiring

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1. All MSZ indoor units must be powered from the outdoor unit.
(Indoor unit cannot be powered from a separate source).

2. MXZ outdoor unit power is 208/230 VAC circuit using a two-conductor wire with ground.

3. Each indoor unit is powered from the outdoor unit from a terminal blocked marked to the specific indoor unit.

4. Connect the indoor unit to the outdoor unit on terminals S1, S2, S3 and ground. Use copper conductors only.

5. A three-pole disconnect switch may be used for shut off or service between the indoor and outdoor unit. (3 pole switch part # TAZ-MS303)

Remark: *A disconnect switch may be required at the indoor unit. Check the local code.
**** Use a ring tongue terminal in order to connect a ground or AWG 12 wire to terminal block.**

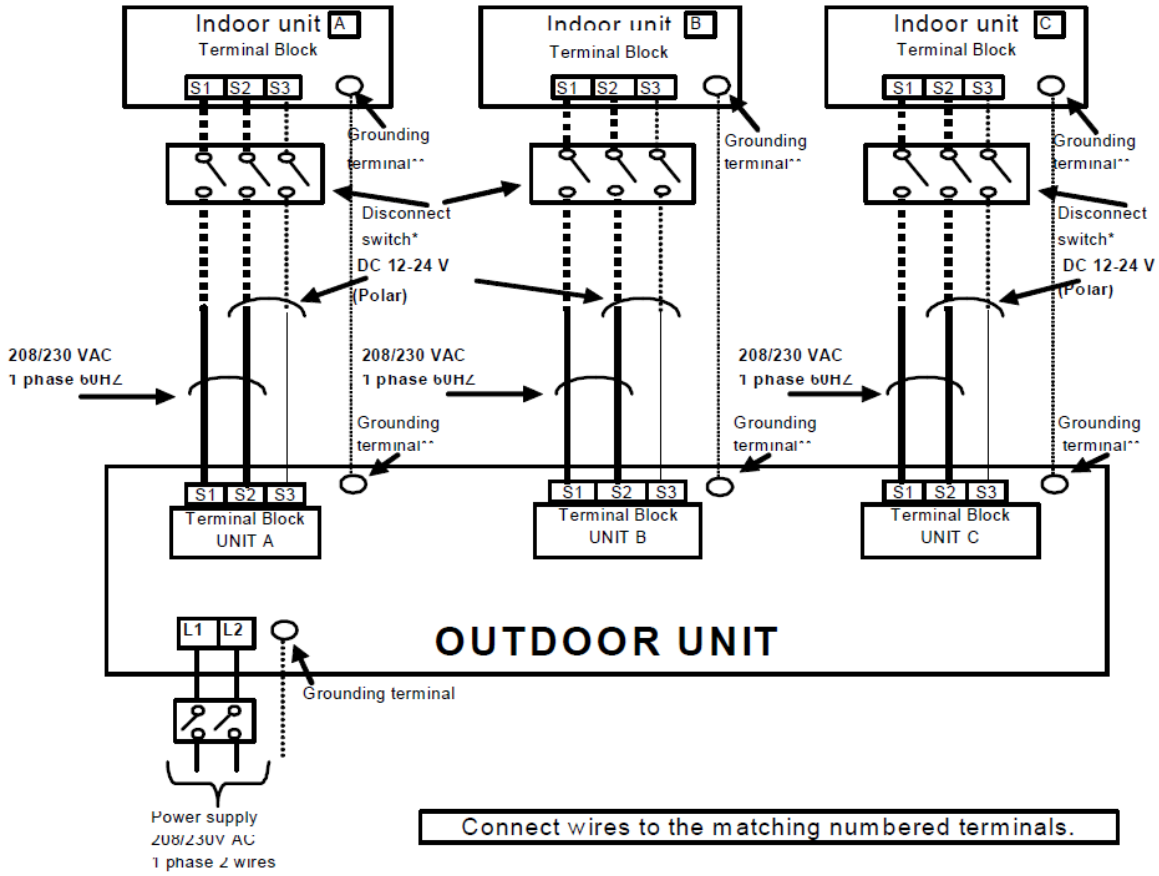

Figure 1. 3 pole switch part # TAZ-MS303

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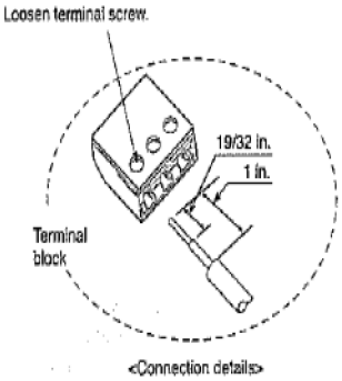
CONNECTING WIRES AND CONNECTING GROUND WIRE

- Use a solid conductor or stranded conductor AWG14.
- Use doubled insulated copper wire with 300 volt insulation.
- Use copper conductors only.
- Follow national and local electrical code.

POWER SUPPLY CABLE AND GROUND WIRE

- Use solid or stranded conductor AWG12** or AWG14 wire.
- Use copper conductors only.
- Follow national and local electrical code.



<Connection details>

Note: All wiring shall comply with NEC and local electrical codes. Refer to unit installation manual for more details.

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Application Note 1006:

Low Temperature Heating Chart

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Heat Pump Capacities

Model Number	55° F	45° F	35° F	25° F	15° F	5° F	0° F
M-Series							
MUZ-A09NA	12,700	11,200	9,600	8,200	6,700	5,575	5,012
MUZ-A12NA	15,800	14,000	12,000	10,200	8,400	6,900	5,975
MUZ-A15NA	21,000	18,500	15,900	13,500	11,100	8,525	7,287
MUZ-A17NA	23,900	21,300	18,400	15,800	12,700	8,400	7,000
MUZ-A24NA	27,000	23,900	20,500	17,400	14,300	11,125	9,537
Multi-Zone							
MXZ-2A20NA	22,000	22,000	19,000	16,500	14,000	11,500	10,250
MXZ-3A30NA	31,150	27,880	24,610	21,340	18,070	14,880	13,247
P-Series							
PUZ-A18NHA	20,000	18,600	16,800	14,600	12,600	10,600	9,600
PUZ-A24NHA	28,000	25,360	22,020	18,680	15,340	12,000	10,333
PUZ-A30NHA	34,000	31,400	28,400	25,400	22,400	19,400	17,900
PUZ-A36NHA	38,000	36,200	32,200	28,200	24,200	20,200	18,200
PUZ-A42NHA	48,000	44,000	39,000	34,000	29,000	24,000	21,500

BTU calculated at 70 degree F intake air dry-bulb temperature.
All specifications and calculations subject to change without notice.

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Application Note 1007:

P-Series Twinning Wiring

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1. Only 24,000 and 36,000 BTU units can be twinned.

2. The two indoor units must equal the capacity of the outdoor unit when added together.

3. Indoor units must be in the same conditioned space since the two return air temperature sensors will be averaged for the space temperature control.

4. The indoor units must be powered from the outdoor unit in a daisy chain fashion as shown in Figure 1.

Note: * A disconnect switch (part# TAZ-MS303) may be required by local code at the indoor unit.
**** Use a ring tongue terminal to connect ground wire and AWG 12 wire to terminals.**

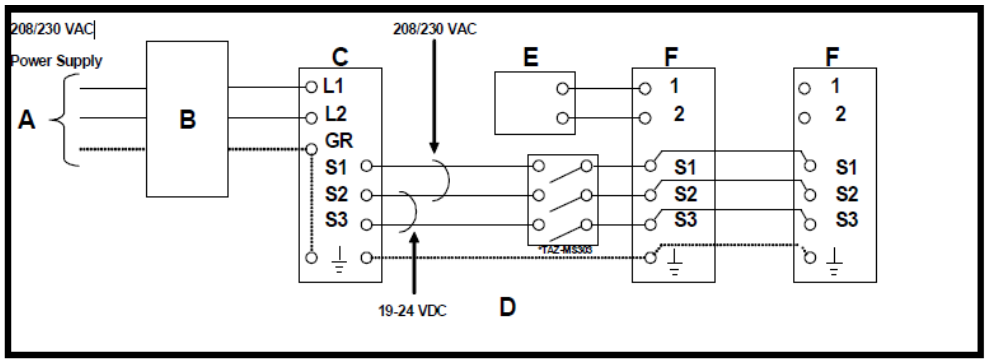

Figure 1. Simultaneous Twin Operation

A= Outdoor unit power supply
B=Wiring circuit breaker or isolating switch
C= Outdoor unit
D= Indoor unit/Outdoor unit connecting wiring
E= Remote Control
F= Indoor unit

CONNECTING WIRES AND CONNECTING GROUND WIRE

- Use a solid conductor or stranded conductor AWG14-3.
- Use doubled insulated copper wire with 600 volt insulation.
- Use copper conductors only.
- Follow national and local electrical code.

POWER SUPPLY CABLE AND GROUND WIRE

- Use solid or stranded conductor AWG12** or AWG14 wire.
- Use solid or stranded conductor AWG14 wire only on S3 communication terminal.
- Use copper conductors only.
- Follow national and local electrical code.

Note: All wiring shall comply with NEC and local electrical codes.
Refer to installation manual for more details.

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Application Note 1008:

MXZ4A36NA Wiring Diagram

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1. All MXZ indoor units must be powered from the outdoor unit. (Indoor unit cannot be powered from a separate source)

2. MXZ outdoor unit is powered 208/230 VAC in a two-conductor wire with ground.

3. Each indoor unit is powered from the outdoor unit from a terminal block marked to indoor unit.

4. Connect the indoor unit to the outdoor unit on terminals S1, S2, S3 and ground. Use copper conductors only.

5. A three-pole disconnect switch may be used for shut off or service between the indoor and outdoor unit. The 3 pole switch part # TAZ-MS303 is shown in Figure 1.

Remark: * A disconnect switch may be required. Check the local code.
**** Use a ring tongue terminal in order to connect a ground wire to terminal.**

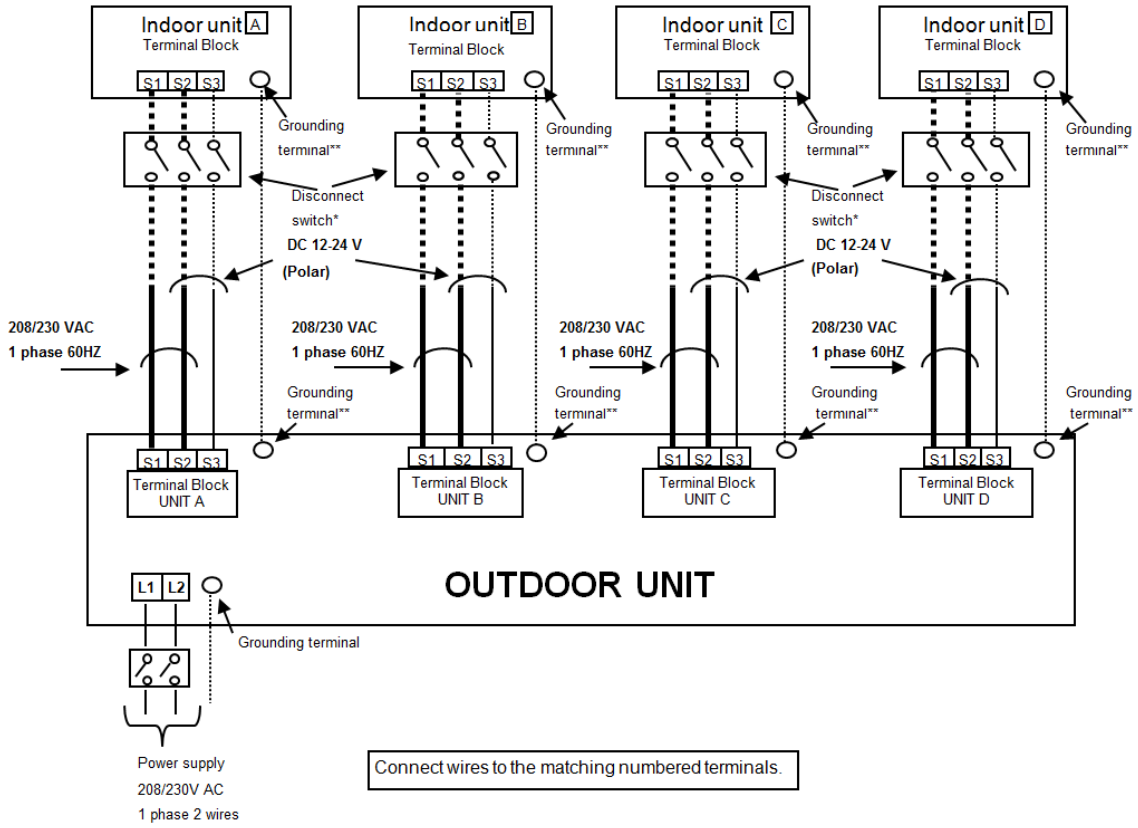

Figure 1. MXZ-4A36NA Wiring

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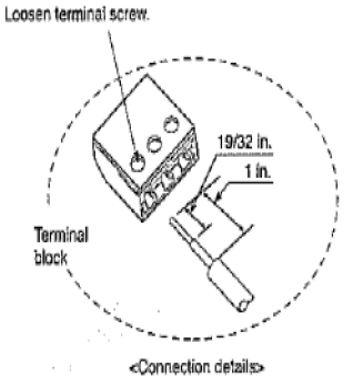
CONNECTING WIRES AND CONNECTING GROUND WIRE

- Use a solid conductor AWG14 or stranded conductor AWG18, AWG16, or AWG14.
- Use doubled insulated copper wire with 300 volt insulation.
- Use copper conductors only.
- Follow national and local electrical code.

POWER SUPPLY CABLE AND GROUND WIRE

- Use solid or stranded conductor AWG14 wire.
- Use copper conductors only.
- Follow national and local electrical code.



<Connection details>

Note: All wiring shall comply with local electrical codes.

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Application Note 1009:

SI-1730-230 Wiring Diagram

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Figure 1 illustrates the SI-1730-230V Wiring Diagram for Mitsubishi Electric Mini-Split Systems.

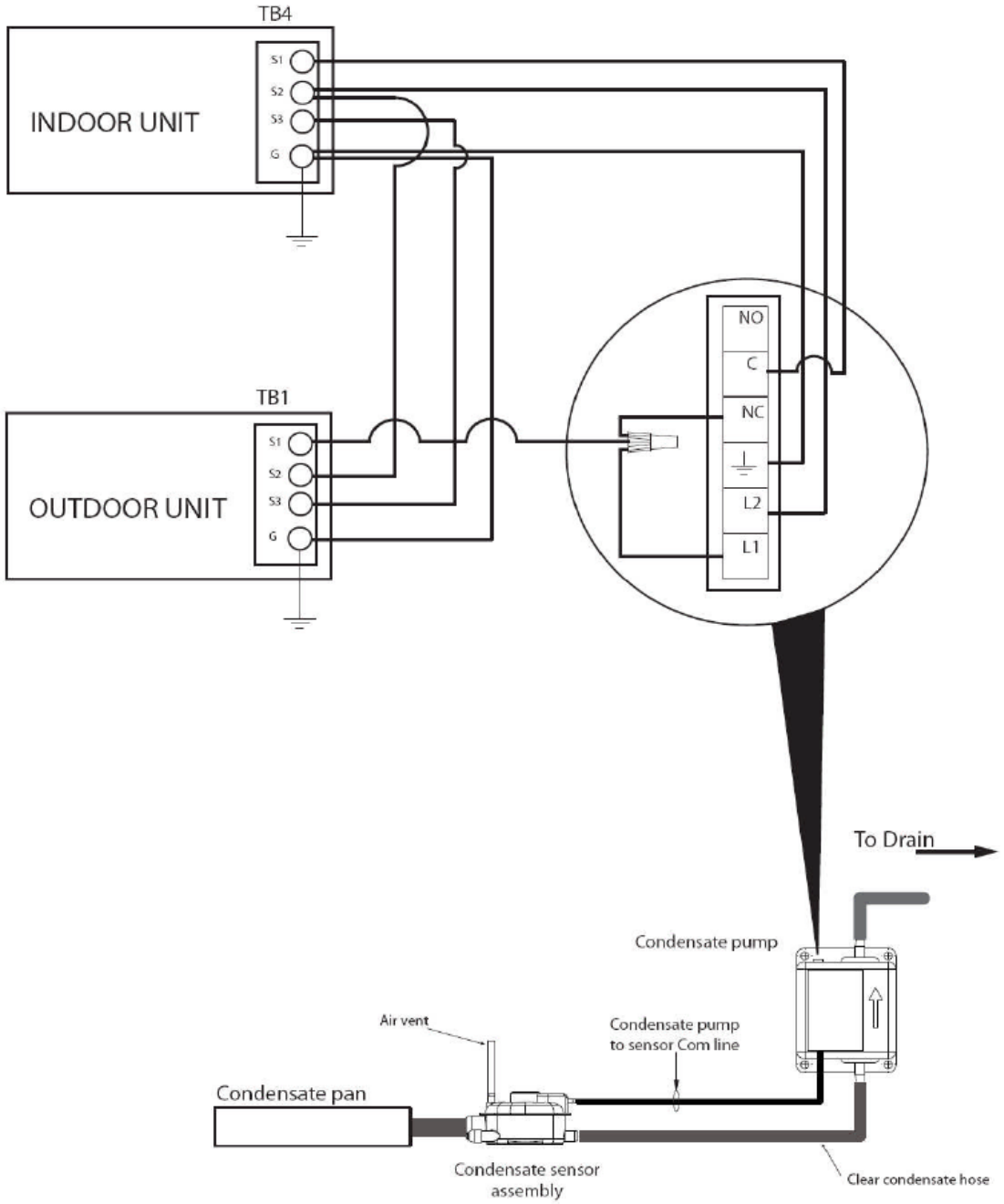

Figure 1. SI-1730 -230V Wiring Diagram

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Application Note 1010:

SI-3100-115 Wiring Diagram

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Figure 1 illustrates the SI-3100-115V Wiring Diagram for Mitsubishi Electric Mini-Split Systems.

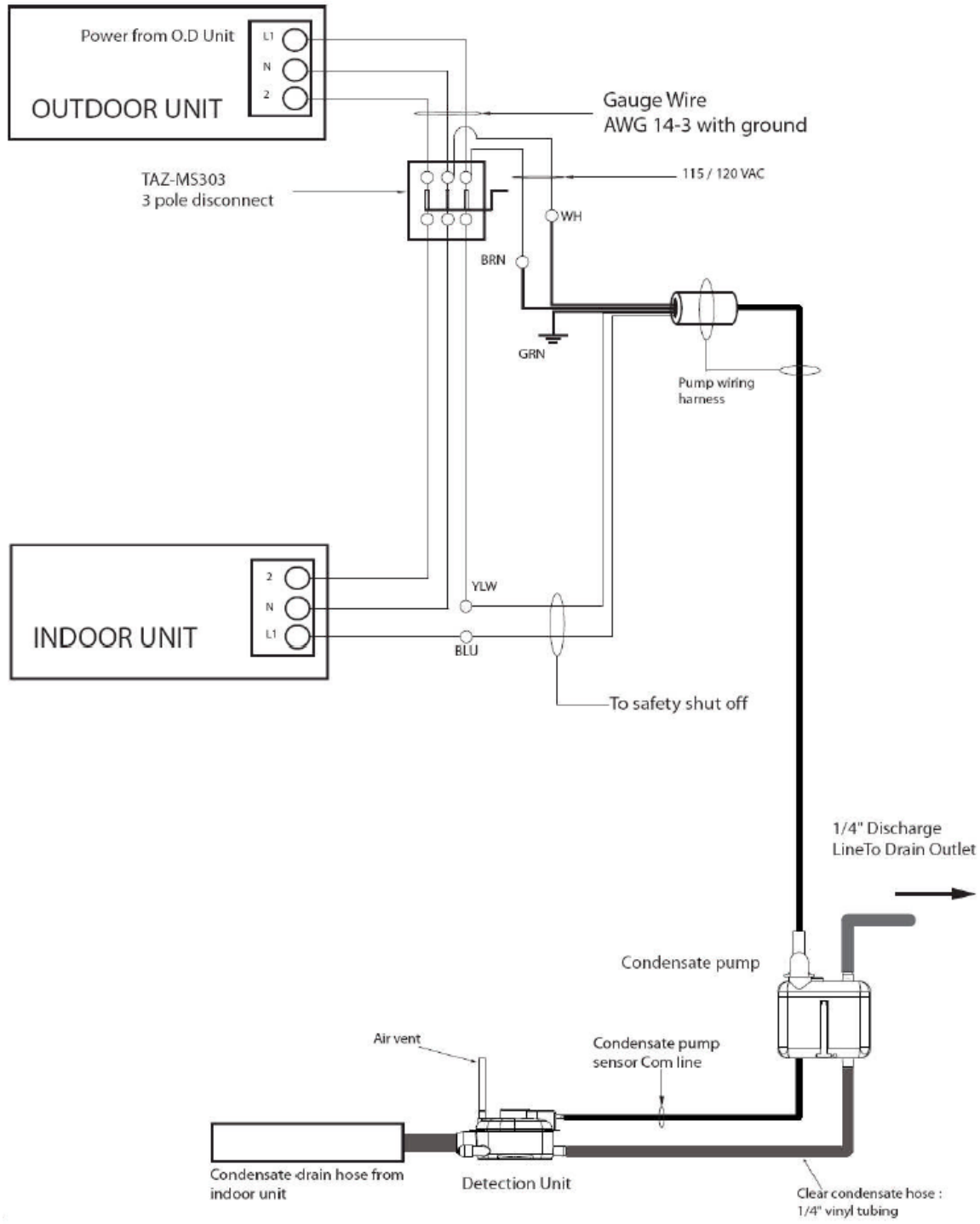

Figure 1. SI-3100-115V Wiring Diagram

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Application Note 1011:

SI-3100-208/230 Wiring Diagram

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Figure 1 illustrates the SI-3100-208/230V Wiring Diagram for Mitsubishi Electric Mini-Split Systems.

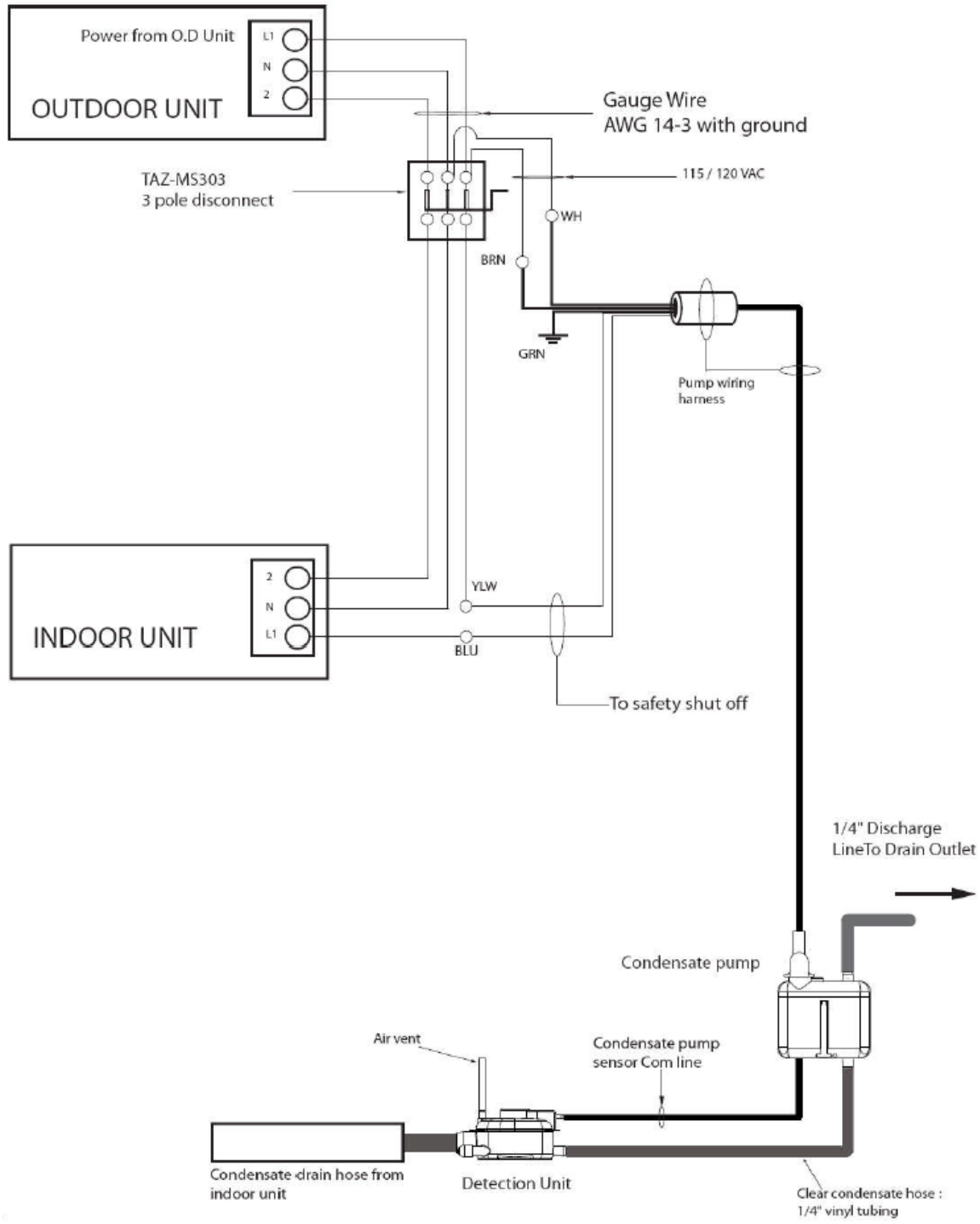

Figure 1. SI-3100-230V Wiring Diagram

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Application Note 1012:

Drain Line Applications

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- Use PVC piping for the drain line.
- When connecting the PVC piping, use adhesive to attach the supplied drain socket.
- Ensure that the drain line (pipe) is properly routed through the wall hole and inclined downwards (away from the indoor unit) as shown in Figure 1.
- The end of the drain line (pipe) must be lower than the drain outlet of the indoor unit.
- Ensure that there are no peaks and valleys in the run of the drain line that may cause trapped drainage. Do NOT install traps in the drain line.
- Ensure that the discharge end of the drain line is NOT submerged in water in a drainage ditch or receptacle.
- Ensure that there is more than 2" (5cm) between the end of the drain line and any obstacles that may impede free flow of condensate.
- When pipework is completed, check to make sure that water flows from the end of the drain pipe freely and ensure that water is not leaking from the drain pipe connections.

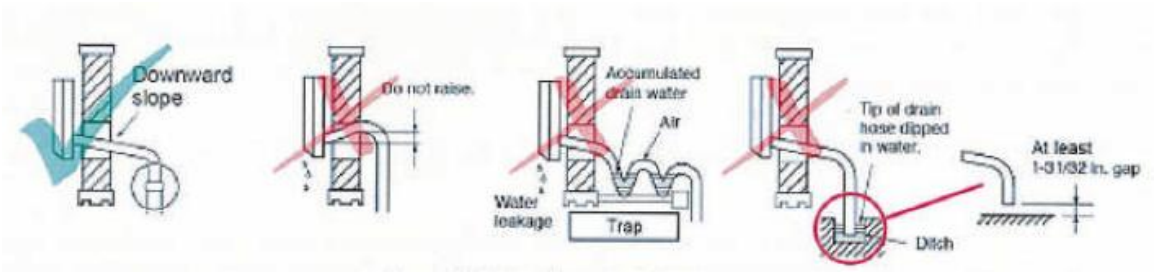

Figure 1. Condensate drain pipe connection

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Application Note 1013:

Rated Capacity vs. Maximum Capacity

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"Rated Capacity" is the system output capacity observed at standard AHRI rated testing conditions (47°F, and 17°F outdoor for heating). AHRI testing, performed to AHRI-210/240, requires the compressors to be run at a constant speed (60Hz) due to testing limitations. Any advantage gained by variable speed equipment is not exhibited in the test results. The test result values are listed in the AHRI *Directory of Certified Product Performance*, which is accessible through the AHRI website. These values are also listed and identified in all Mitsubishi Electric HVAC published resources, including brochures, technical documentation, and the website.

"Maximum Capacity" is the actual output capacity units will produce when trying to achieve set point condition (selected room temperature) from relative load condition (current room temperature). The greater the load requirement, the more the capacity increases until maximum capacity of the unit is reached. *Maximum Capacity was equal to Rated Capacity before the introduction of inverter drive variable-speed compressor systems*. Maximum Capacities are also listed and identified in all Mitsubishi Electric HVAC published resources.

Example: MSZ-FE12NA, 12,000 BTU/h Heat-pump System

- Rated Heating Capacity at 47°F = 13,600 BTU/h
- Rated Heating Capacity at 17°F = 8,300 Btu/h
- Maximum Heating Capacity at 17°F = 13,600 BTU/h

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Application Note 1014:

M-Series Dry Mode Description

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Mitsubishi Electric/HVAC Division offers air conditioning equipment specifically for thermal comfort conditioning. While the units are designed for cooling and in the case of Heat Pumps for heating and not for humidity control there is a function to reduce the latent content in the air. Dry Mode is the operating mode for Mr. Slim and CITY MULTI indoor units used to reduce the moisture content of the air in the conditioned space served by the indoor unit – without significantly reducing the room temperature.

The reduction is accomplished by reducing the airflow across the indoor coil and controlling the temperature of the coil surface so that the surface remains slightly below the dew point of the return air. The coil temperature is maintained by a combination of time based compressor or LEV – Linear Expansion Valve – operation, temperature output information from the smart coil and room temperature sensor input.

Dry Mode is available on all of the Mitsubishi/HVAC indoor units and is selectable on Mr. Slim M or P Series via the unit's Remote Controller (Wired or Wireless) or in the case of CITY MULTI by the local controller, central controller (G-50A/GB-50) or the TG-2000 software.

Dry Mode is selected by pressing the MODE button until the display reads "Dry". Then from the SET TEMP buttons the desired space temperature is selected to control room comfort. To use Dry Mode the room temperature must be greater than 65°F.

In Dry Mode, the indoor fan runs on very LOW speed during compressor operation (Mr. Slim 1:1 Systems) or when the LEV is open (Mr. Slim Multi Zone or CITY MULTI Systems.) The fan speed cannot be changed using the remote controller while in Dry Mode. Operation is a combination of time based cooling related to setpoint and space temperature. An example of the operating sequence is shown in Table 1.

Table 1. An example of the operating sequence

CITY MULTI		Indoor LEV	
THERMOSTAT	ROOM TEMP	ON	OFF
CALLING	**82° or more**	**9 Minutes**	**3 Minutes**
CALLING	**79° - 82°**	**7 Minutes**	**3 Minutes**
CALLING	**75° - 79°**	**5 Minutes**	**3 Minutes**
CALLING	**64° - 75°**	**3 Minutes**	**3 Minutes**
CALLING	**less than 64°**	**--**	**Always**
SATISFIED	**64° or more**	**3 Minutes**	**10 Minutes**
	less than 64°	**--**	**Always**

Dry mode establishes the refrigerant flow such that the coil temperature is low enough to condense the water vapor in the air but minimize reduction of the air temperature. This is a cumulative action so the air becomes dryer with each pass of the air through the coil.

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The relationship between the room temperature and the set temperature in Dry Mode is shown in Figure 1.

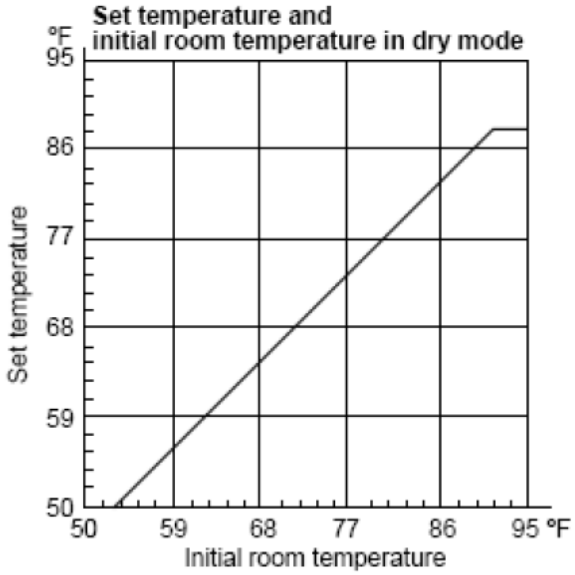

Figure 1. The relationship between room temperature and set temperature

Dry Mode uses the same coil frost prevention (defrost) as the Cool Mode to eliminate ice on the coil.

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Application Note 1015:

M&P-Series Air Outlet Coverage Range

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Table 1. Air Outlet Coverage Range for MSZ-A & MSY-A

Model	Mode	Function	Air flow (CFM)	Air speed (ft./sec.)	Coverage range (ft.)
MSZ-A09NA	HEAT	Dry	307	16.8	23.4
	COOL	Dry	307	16.8	23.4
		Wet	275	15.1	21.0
MSZ-A12NA	HEAT	Dry	353	19.3	26.7
	COOL	Dry	353	19.3	26.7
		Wet	318	17.4	24.1
MSZ-A15NA	HEAT	Dry	381	20.9	28.8
MSZ-A15NA MSY-A15NA	COOL	Dry	381	20.9	28.8
		Wet	342	18.8	26.0
MSZ-A17NA	HEAT	Dry	381	20.9	28.8
MSZ-A17NA MSY-A17NA	COOL	Dry	381	20.9	28.8
		Wet	342	18.8	26.0
MSZ-A24NA	HEAT	Dry	568	20.2	34.4
MSZ-A24NA MSY-A24NA	COOL	Dry	568	20.2	34.4
		Wet	508	18.1	30.9

- The air coverage range is the figure up to the position where the air speed is 1 ft/sec., when air is blown out horizontally from the unit properly at the High speed position.
  The coverage range should be used only as a general guideline since it varies according to the size of the room and furniture arranged inside the room.

Table 2. Air Outlet Coverage Range for MSZ-FD

Model	Mode	Function	Airflow (CFM)	Air speed (ft./sec.)	Coverage (ft.)
MSZ-FD09NA	HEAT	Dry	381	19.2	27.7
	COOL	Dry	339	17.1	24.7
		Wet	307	15.5	22.4
MSZ-FD12NA	HEAT	Dry	420	21.2	30.4
	COOL	Dry	381	19.2	27.7
		Wet	350	17.6	25.4

- The air coverage range is the figure up to the position where the air speed is 1 ft/sec., when air is blown out horizontally from the unit properly at the High seed position.
  The coverage range should be used only as a general guideline since it varies according to the size of the room and furniture arranged inside the room.

Table 3. Air Outlet Coverage Range for MSZ-D

Model	Mode	Function	Airlow (CFM)	Air speed (ft./sec.)	Coverage range (ft.)
MSZ-D30NA **MSZ-D36NA**	HEAT	Dry	848	23.6	45.0
MSZ-D30NA **MSZ-D36NA** **MSY-D30NA** **MSY-D36NA**	COOL	Dry	848	23.6	45.0
		Wet	763	21.3	40.7

- The air coverage range is the figure up to the position where the air speed is 1 ft/sec., when air is blown out horizontally from the unit properly at the High speed position.
  The coverage range should be used only as a general guideline since it varies according to the size of the room and furniture arranged inside the room.

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2013 P-Series and M-Series - Application Notes (June 2013)
APP-35

Table 4. Air Outlet Coverage Range for P-Series

		PLA-A12AA	PLA-A18AA	PLA-A24AA	PLA-A30AA	PLA-A36AA	PLA-A42AA
Air flow	CFM	490	710	710	710	990	990
Air speed	ft/sec.(m/sec.)	10.8(3.3)	13.1(4.0)	13.1(4.0)	13.1(4.0)	16.1(4.9)	16.1(4.9)
Coverage range	ft(m)	14(4.4)	19(5.7)	19(5.7)	19(5.7)	24(7.4)	24(7.4)

		PCA-A24GA	PCA-A30GA	PCA-A36GA	PCA-A42GA
Air flow	CFM	635	635	880	880
Air speed	ft/sec.(m/sec.)	12.5(3.8)	12.5(3.8)	13.5(4.1)	13.5(4.1)
Coverage range	ft(m)	34(10.4)	34(10.4)	40(12.6)	40(12.6)

		PKA-A12GA PKA-A12GAL	PKA-A18GA PKA-A18GAL
Air flow	CFM	425	425
Air speed	ft/sec.(m/sec.)	17.4(5.3)	17.4(5.3)
Coverage range	ft(m)	33(10)	33(10)

		PKA-A24FA PKA-A24FAL	PKA-A30FA PKA-A30FAL	PKA-A36FA PKA-A36FAL
Air flow	CFM	705	705	990
Air speed	ft/sec.(m/sec.)	16.1(4.9)	16.1(4.9)	17.7(5.4)
Coverage range	ft(m)	41(12.4)	41(12.4)	50(15.3)

The air coverage range is the value up to the position where the air speed is 0.8 ft/sec. when air is blown out horizontally from the unit at the Hi notch position.

The coverage range should be used only as a general guideline since it varies according to the size of the room and the furniture inside the room.

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APPLICATION NOTES

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Application Note 1016:

M&P-Series Remote Access

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The Mr. Slim® product line has the capability to be controlled remotely by using the CITY MULTI® Centralized Controllers (AG-150/GB-50/GB-24), TG-2000 or by using an external automation system (Building Management System) using either LonWorks® or BACnet® (Building Automation and Control Networks) .

The Centralized Controllers AG-150 and GB-50 can manage up to 50 indoor units and the GB-24 can manage up to 24 indoor units in terms of monitoring, operation, scheduling (daily/annual/weekly), maintenance diagnostics. The units can be controlled individually, in a group or in a collective batch operation. They can control On/Off, operation mode selection (Cool, Heat, Auto (R2-series only), Dry, Fan), temperature setting and air flow direction. Scheduling supports daily, weekly and annual schedules through the licensed operation via the PC browser. Remote controller functions (On/Off, Change Operation Mode and Set Temperature) can be permitted or prohibited from the Central Controller. The Centralized controller has an external input/output the can be used for batch operations such as Start/Stop and Emergency Stop.

TG-2000 Integrated System Software enables the building manager to control up to 40 AG-150/GB-50 Centralized Controllers with a maximum of 2,000 indoor units across multiple CITY MULTI® and Mr. Slim® outdoor units. TG-2000 requires a field supplied dedicated networked PC and AG-150/GB-50 software licenses (per AG-150/GB-50 per function).

The LM Adapter is a communication interface to connect the Mitsubishi Electric made products for M-NET use with the LonWorks® network. The LonWorks® interface requires LMAP03U. The LMAP03U can manage up to 50 indoor units per device. LonWorks® Building Management System (BMS) can be constructed to perform Monitoring/Operation, Scheduling Operations, Interlock Operations and Energy Saving Control. The Centralized Controller (AG-150/GB-50) is not required but is recommended.

The BACnetIF software is a communication interface to connect the Mitsubishi Electric made products for M-NET use with the BACnet® network. The BACnet® interface requires the SW-BACnet (PAC-YTG31CDA) software license for each Centralized Controller (AG-150/GB-50) and a field supplied PC with 2 LAN ports running the BACnet IF software. The BACnet IF software can manages up to 10 Centralized Controllers (AG-150/GB-50) connected to a single dedicated PC.

The M-NET converter PAC-SF81MA will allow for control of the Mr. Slim® P-Series units when connected to the CITY MULTI® Controls Network (CMCN). The M-NET converter is to be connected to each outdoor unit with connected indoor units.

The Mr. Slim® P-Series can receive an external Enable/Disable signal through the connector CN32 or CN51 on the indoor unit. These connectors allow for application such as enabling or disabling the indoor unit based upon an occupancy sensor.
The M-NET converter MAC-399IF will allow for control of the Mr. Slim® M-Series units when connected to the CITY MULTI® Controls Network (CMCN). The converter

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2013 P-Series and M-Series - Application Notes (June 2013)
APP-38

is to be used for each indoor unit with connected outdoor unit. The MAC-399IF can only be used with the inverter models of the M-Series (MXZ/MSY/MSZ).

Note: The MAC-399IF M-NET converter cannot be used together with the MAC-397IF hard wire MA controller adapter on the same unit. If connection to the Centralized Controller and a hard wired remote controller is needed, use the ME controller for connection to the M-NET.

The Mr. Slim® M-Series can receive an external Enable/Disable signal by Breaking S1, S2, and S3 at the indoor unit. Breaking these terminals will allow an automation system the ability to schedule the Mr. Slim M-Series units On/Off.

Applications

P-Series

When the P-Series units are to be integrated into the CITY MULTI® network with the **Centralized Controllers** the following components are needed:

- PAC-SF81MA – M-NET converter (per outdoor unit)
- AG-150/GB-50/GB-24 – Centralized Controller

When the P-Series units are to be integrated into the CITY MULTI® network with **TG-2000** the following components are needed:

- PAC-SF81MA – M-NET converter (per outdoor unit)
- AG-150/GB-50 – Centralized Controller
- TG-2000 software
- Dedicated PC – Runs TG-2000 software
- SW-Mon/SW-Sch – Monitoring and Scheduling software (minimum software required) for each connected Centralized Controller
- SW-Charge – Tenant Billing software for each connected Centralized Controller (optional)
-

When the P-Series units are to be integrated into **LonWorks®** network the following components are needed:

- PAC-SF81MA - M-NET converter (per outdoor unit)
- AG-150/GB-50 – Centralized Controller (recommended)
- LMAP03U – LonWorks® Interface

When the P-Series units are to be integrated into the **BACnet®** network the following components are needed:

- PAC-SF81MA – M-NET converter (per outdoor unit)
- AG-150/GB-50 – Centralized Controller
- SW-BACnet (PAC-YTG31CDA) – needed for each connected Centralized Controller
- BACnetIF software – located on the CITY MULTI Controls Network CD (CMCN CD)
- Dedicated PC – PC runs BACnetIF software, must have 2 LAN cards, handles up to 10 Centralized Controllers

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M-Series

When the M-Series units are to be integrated into the CITY MULTI® network with the **Centralized Controllers** the following components are needed:

- MAC-399IF – M-NET converter (per indoor unit)
- AG-150/GB-50/GB-24 – Centralized Controller

When the M-Series units are to be integrated into the CITY MULTI® network with **TG-2000** the following components are needed:

- MAC-399IF – M-NET converter (per indoor unit)
- AG-150/GB-50 – Centralized Controller
- TG-2000 software
- Dedicated PC – Runs TG-2000 software
- SW-Mon/SW-Sch – Monitoring and Scheduling software (minimum software required) for each connected Centralized Controller
- SW-Charge – Tenant Billing software for each connected Centralized Controller (optional)

When the M-Series units are to be integrated into **LonWorks®** network the following components are needed:

- MAC-399IF - M-NET converter (per indoor unit)
- AG-150/GB-50 – Centralized Controller (recommended)
- LMAP03U – LonWorks® Interface

When the M-Series units are to be integrated into the **BACnet®** network the following components are needed:

- MAC-399IF – M-NET converter (per indoor unit)
- AG-150/GB-50 – Centralized Controller
- SW-BACnet (PAC-YTG31CDA) – needed for each connected Centralized
- Controller
- BACnetIF software – located on the CITY MULTI Controls Network CD
- (CMCN CD)
- Dedicated PC – PC runs BACnetIF software, must have 2 LAN cards, handles up to 10 Centralized Controllers

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Application Note 1017:

M-Series Cooling Charts

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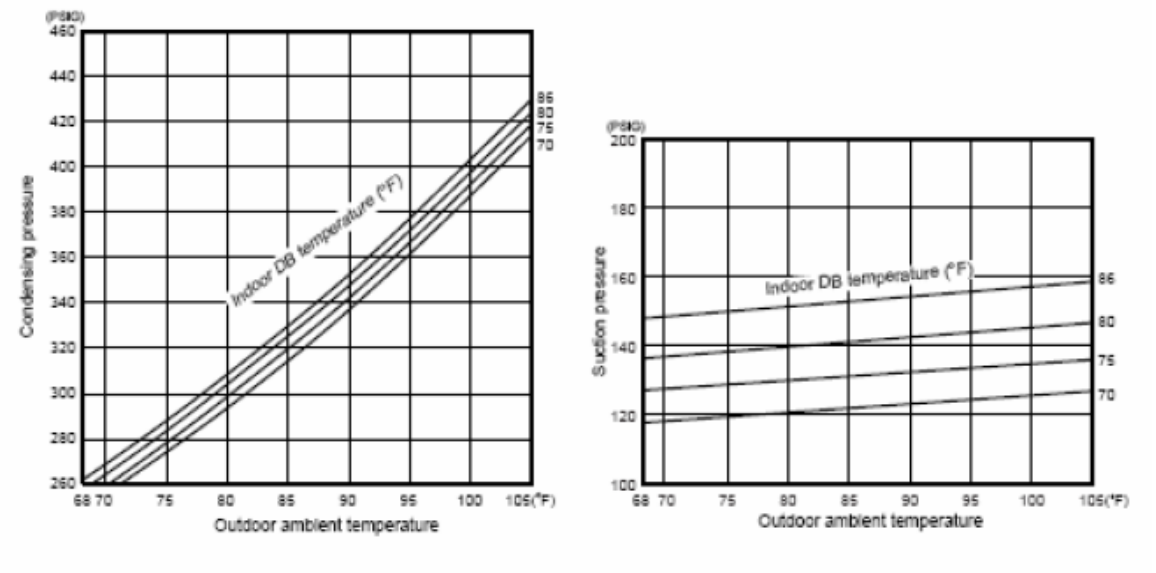
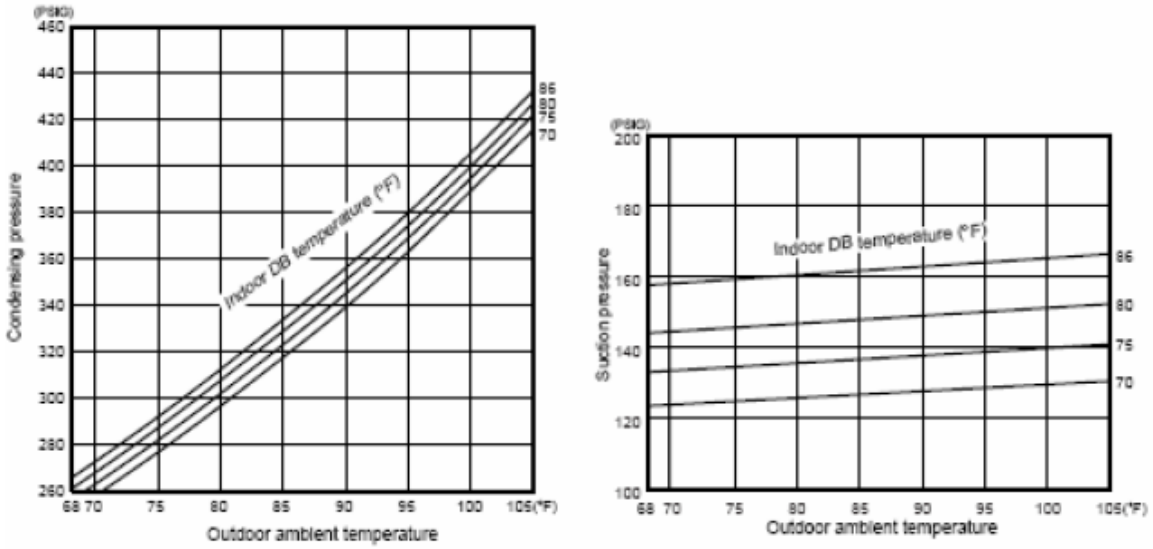
7-3. Condensing pressure
Data is based on the condition of indoor humidity 50%.
Air flow should be set at High.
A point on the curve shows the reference point.

MU-A09WA



MU-A12WA



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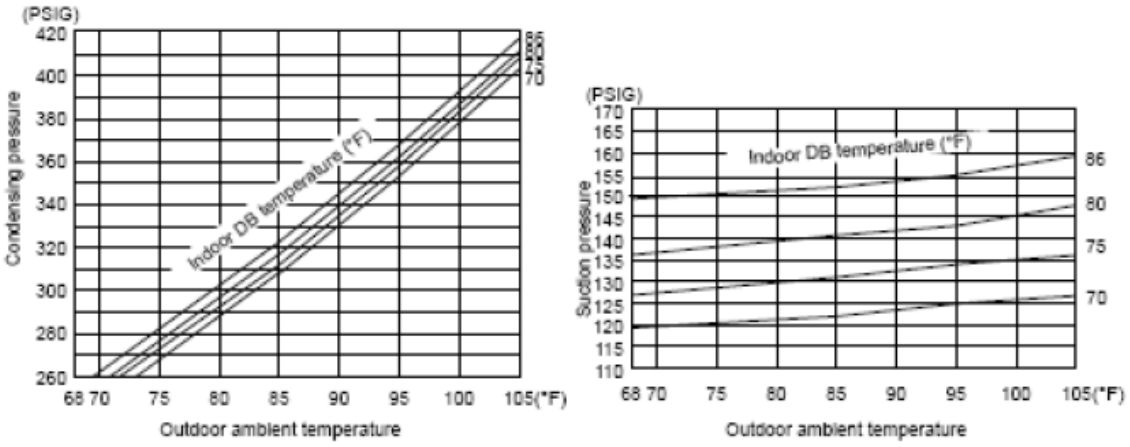
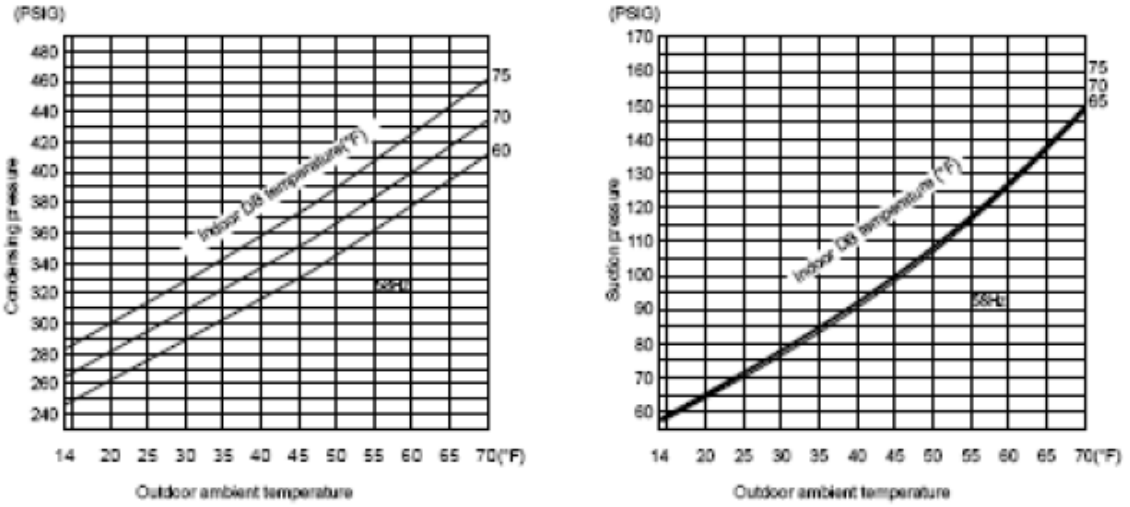
Cooling
Data is based on the condition of indoor humidity 50%.
Air flow should be set to High speed.

MUZ-A09NA
MUZ-A09NA-U1



MUZ-A09NA-1
MUZ-A09NA-U2



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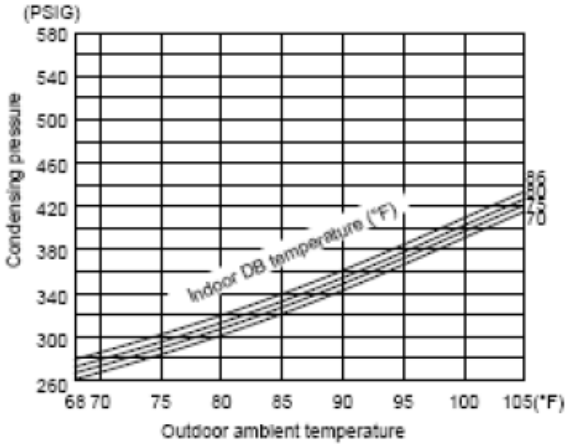
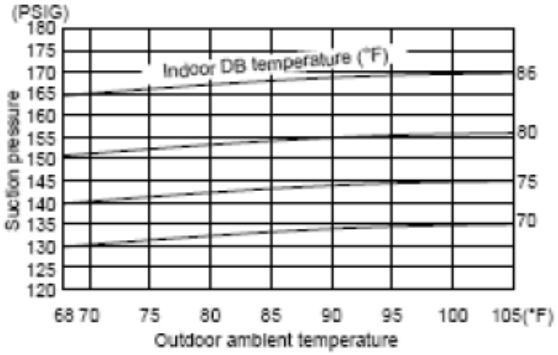
Cooling

Data is based on the condition of indoor humidity 50%.
Air flow should be set to set to High speed.

MUZ-FD09NA





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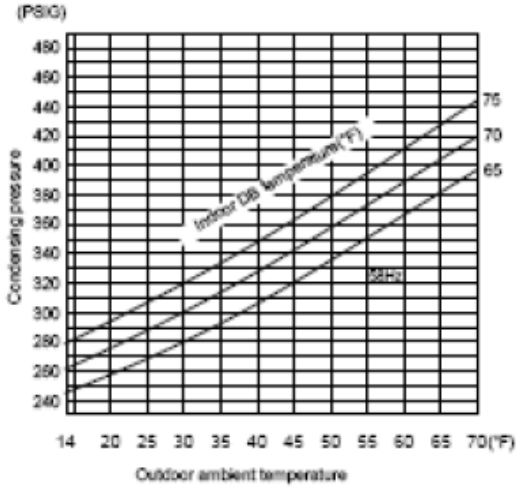

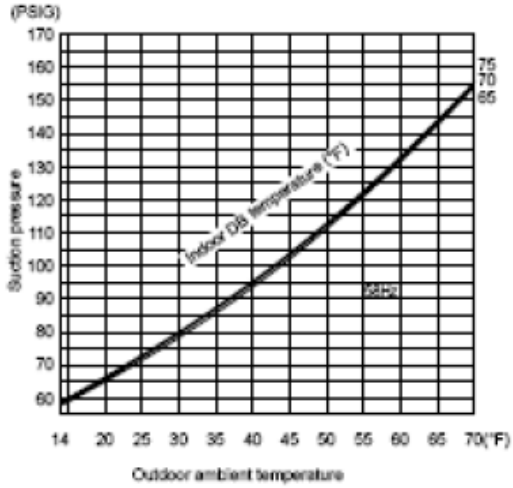

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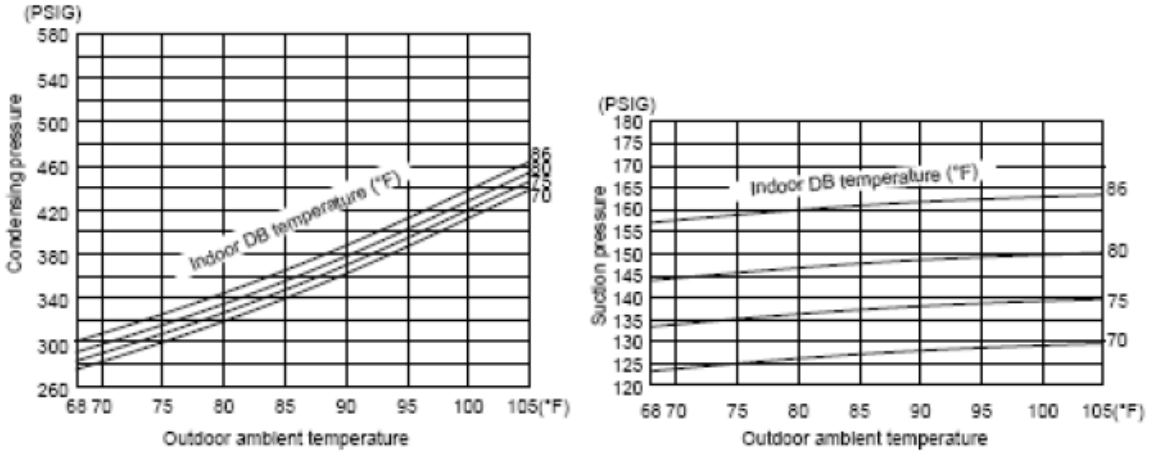
2013 P-Series and M-Series - Application Notes (June 2013)
APP-44

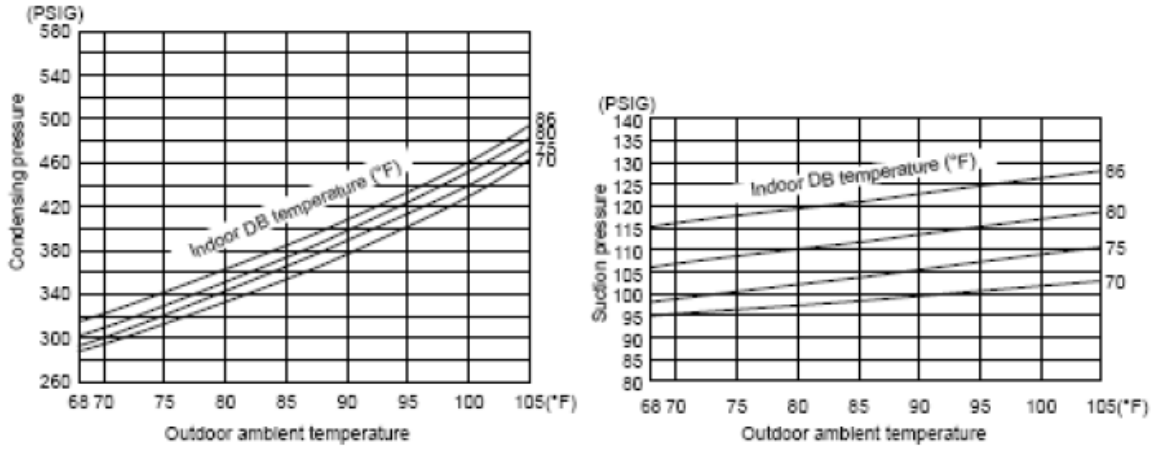
Cooling

Data is based on the condition of indoor humidity 50%.
Air flow should be set to set to High speed.

MUZ-FD12NA



MUZ-A15NA
MUY-A15NA



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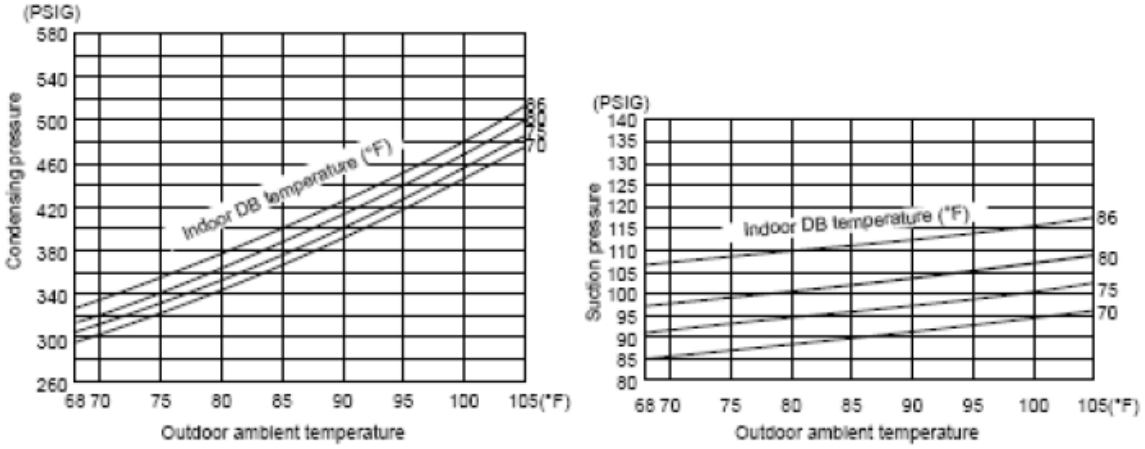
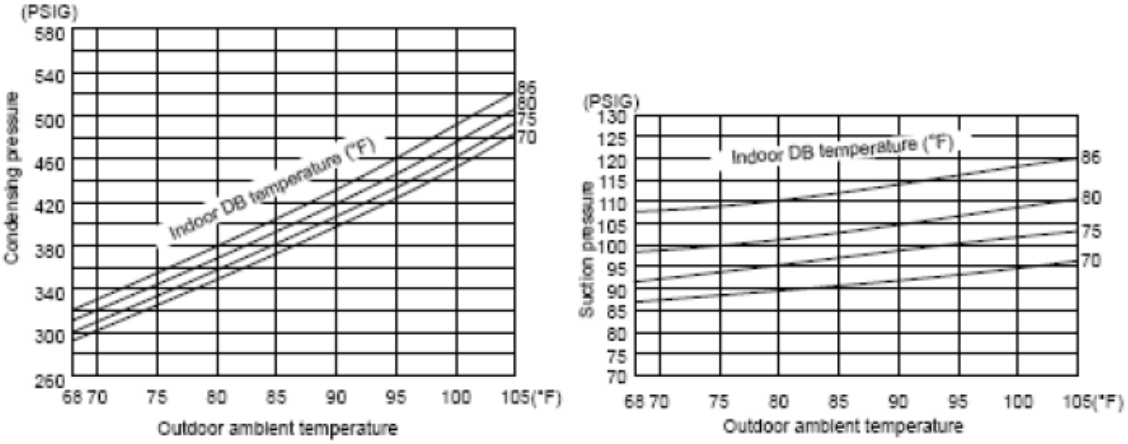
Cooling
Data is based on the condition of indoor humidity 50%.
Air flow should be set to set to High speed.

MUZ-A17NA
MUY-A17NA



MUZ-A24NA
MUY-A24NA



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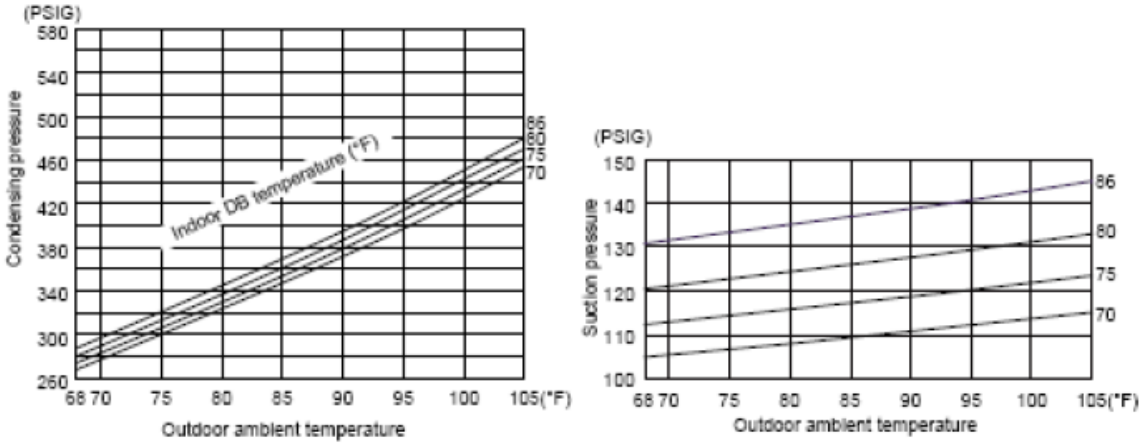
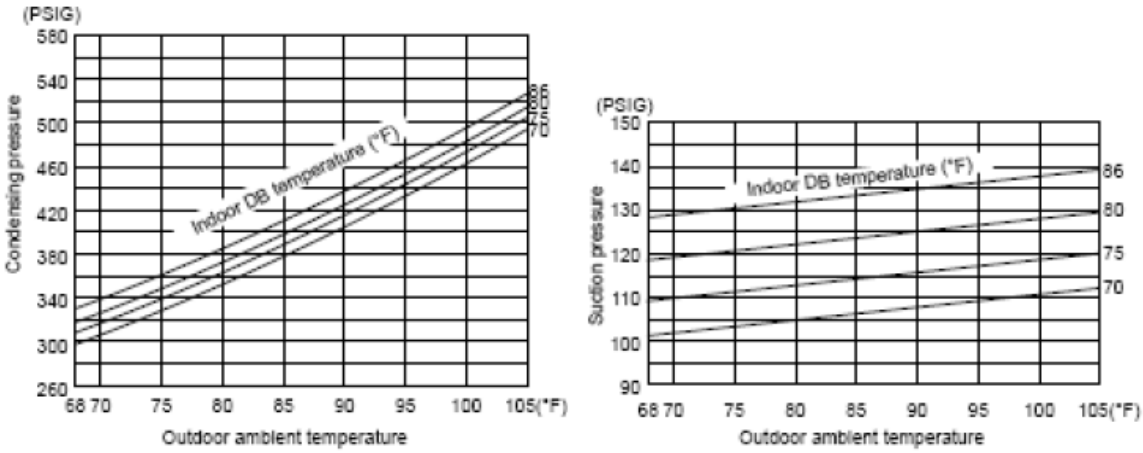
Cooling

Data is based on the condition of indoor humidity 50%.
Air flow should be set to set to High speed.

MUZ-GA24NA
MUY-GA24NA



MUY-D30NA



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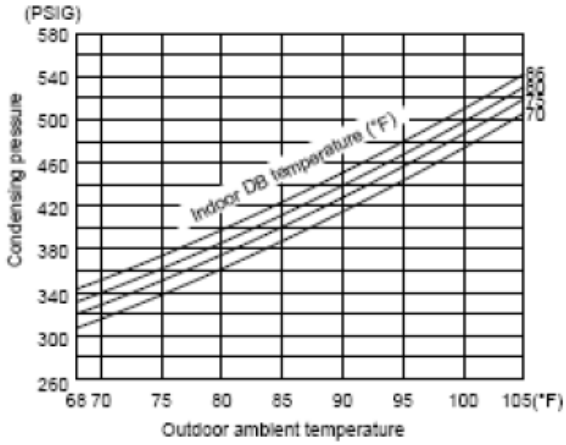
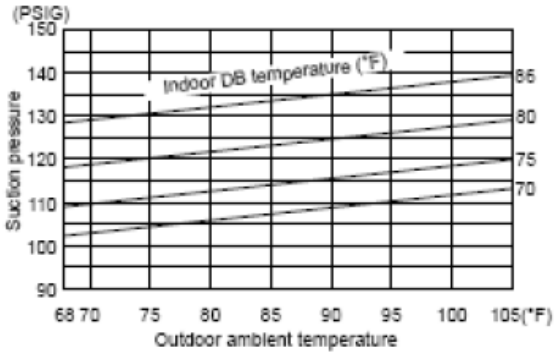
Cooling

Data is based on the condition of indoor humidity 50%.
Air flow should be set to set to High speed.

MUZ-D30NA





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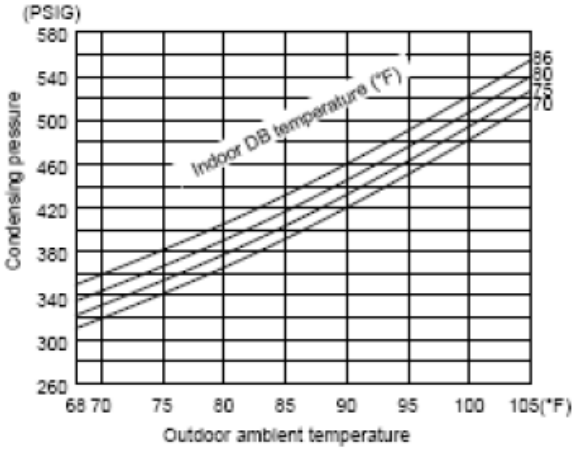

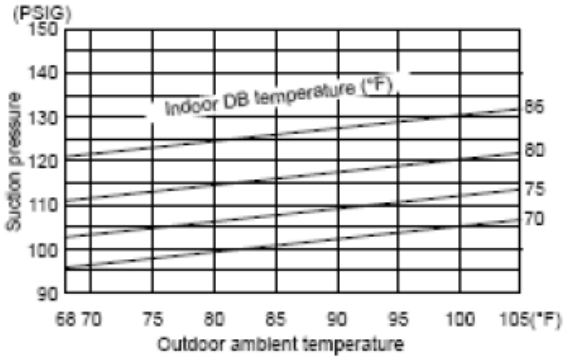

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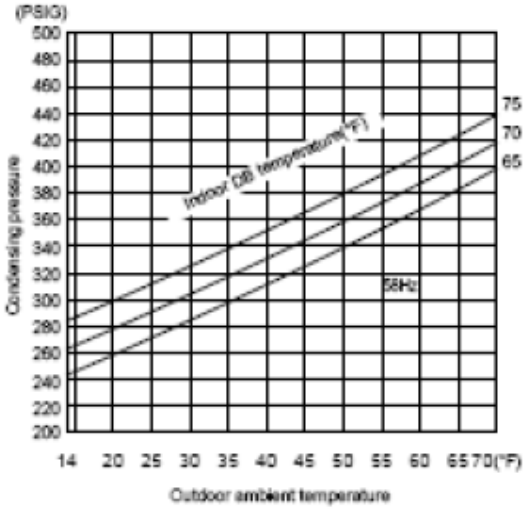
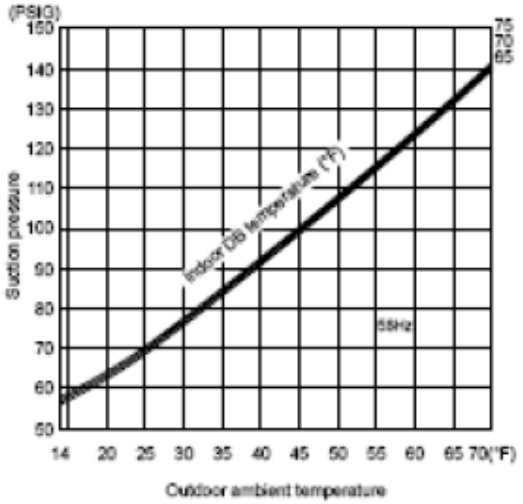
Cooling
Data is based on the condition of indoor humidity 50%.
Air flow should be set to set to High speed.

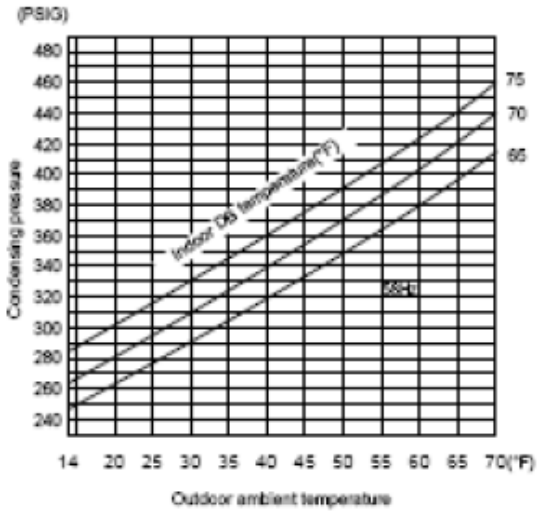
MUZ-D36NA

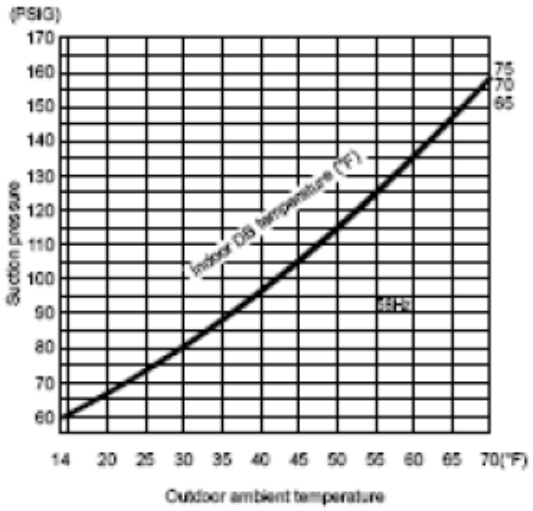




Heating
Data is based on the condition of outdoor humidity 75%.
Air flow should be set to High speed.
Data is for heating operation without any frost.

MUZ-A09NA
MUZ-A09NA-U1





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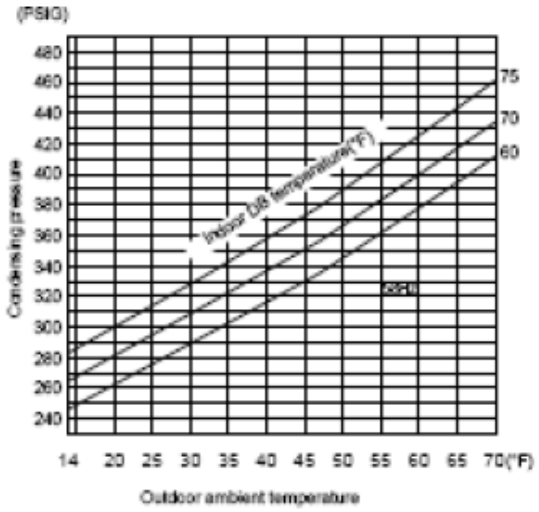
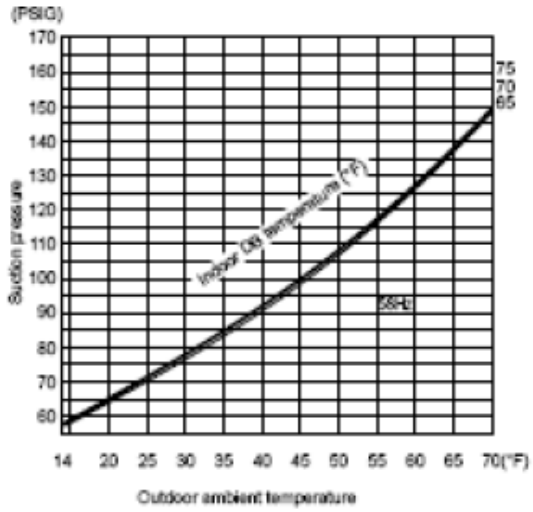
Heating

Data is based on the condition of outdoor humidity 75%.
Air flow should be set to High speed.
Data is for heating operation without any frost.

MUZ-A09NA-1
MUZ-A09NA-U2





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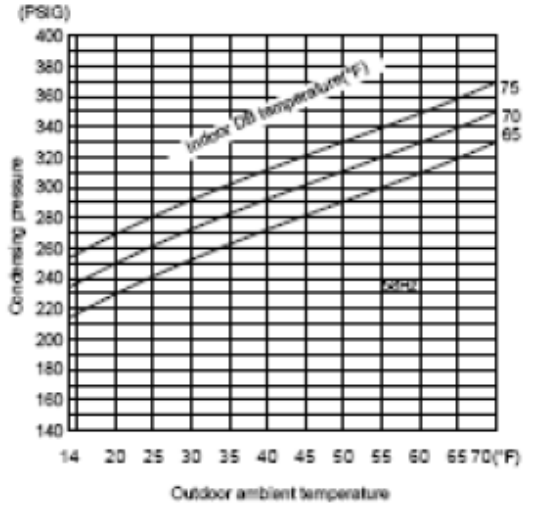

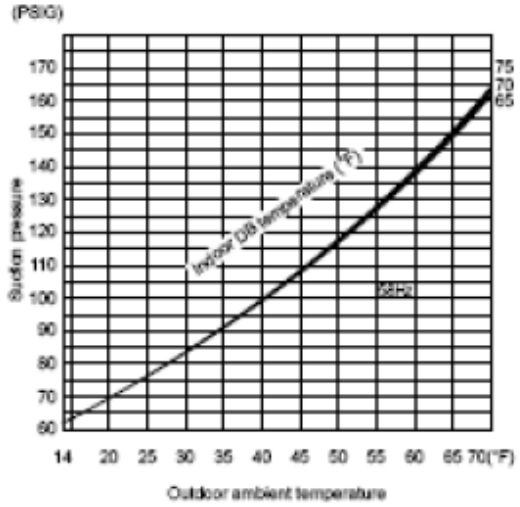

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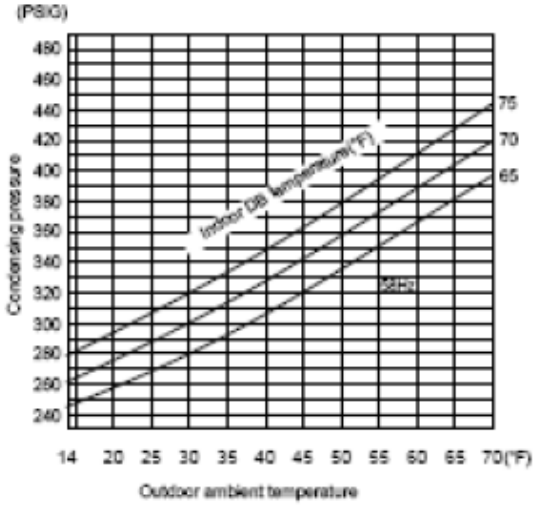
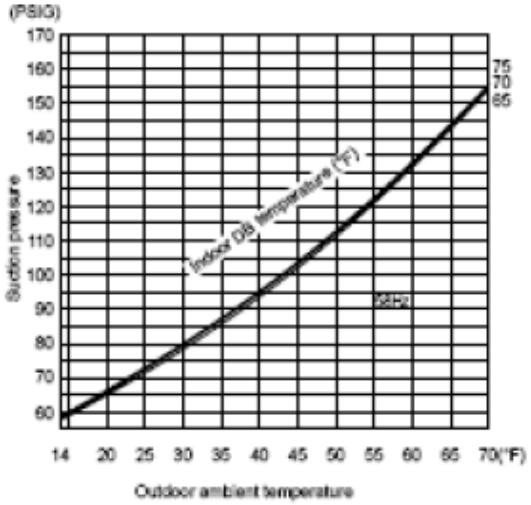
2013 P-Series and M-Series - Application Notes (June 2013)
APP-50

Heating

Data is based on the condition of outdoor humidity 75%.
Air flow should be set to High speed.
Data is for heating operation without any frost.

MUZ-A12NA





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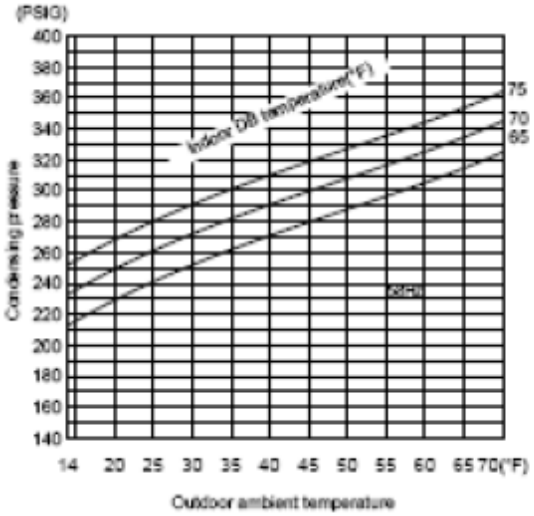

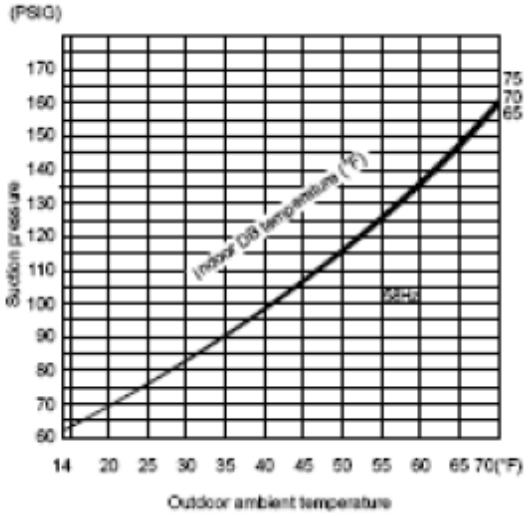

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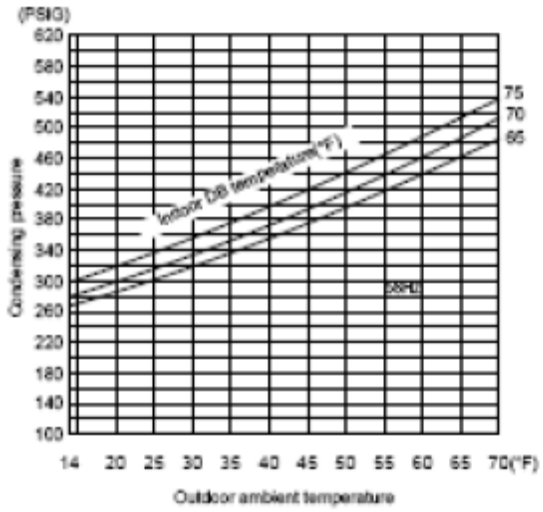
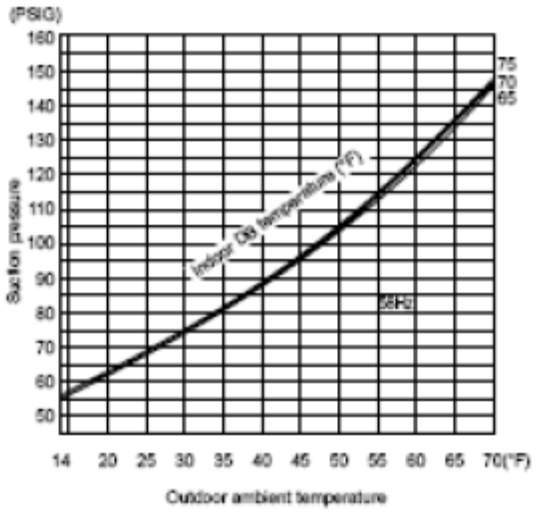
Heating

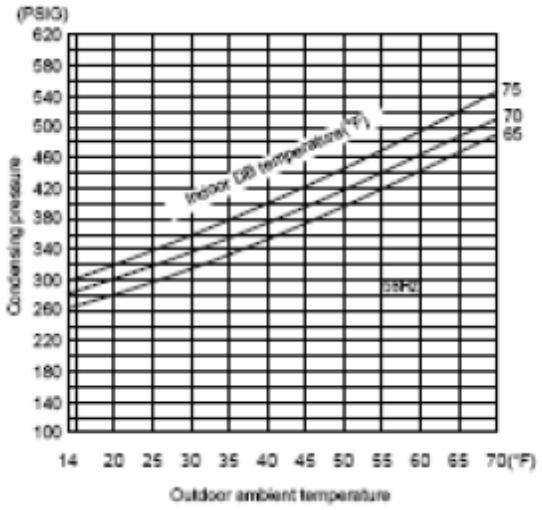
Data is based on the condition of outdoor humidity 75%.
Air flow should be set to High speed.
Data is for heating operation without any frost.

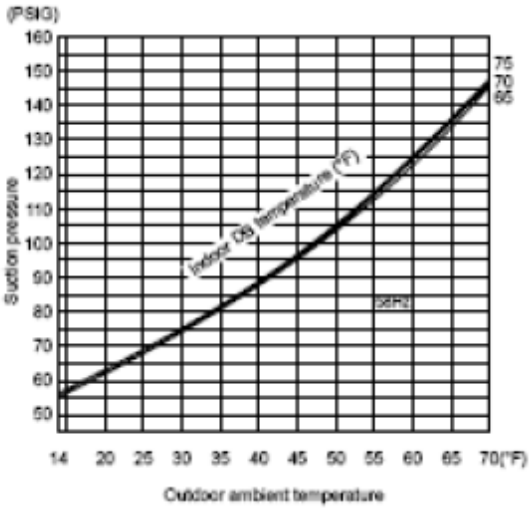
MUZ-A15NA





MUZ-A17NA





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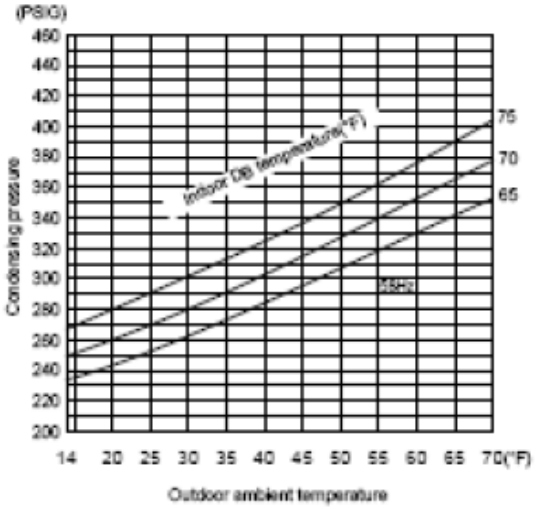
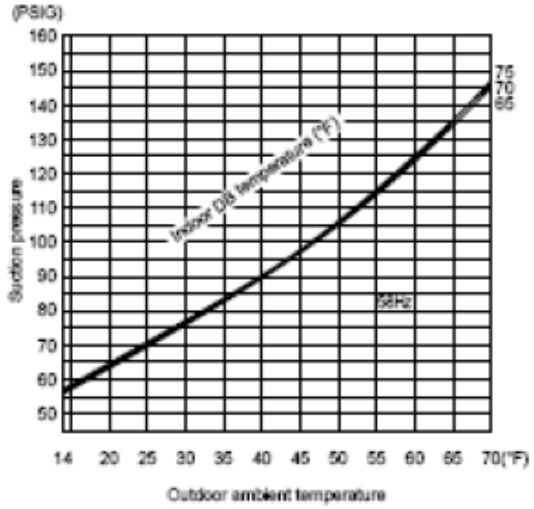
2013 P-Series and M-Series - Application Notes (June 2013)
APP-52

Heating

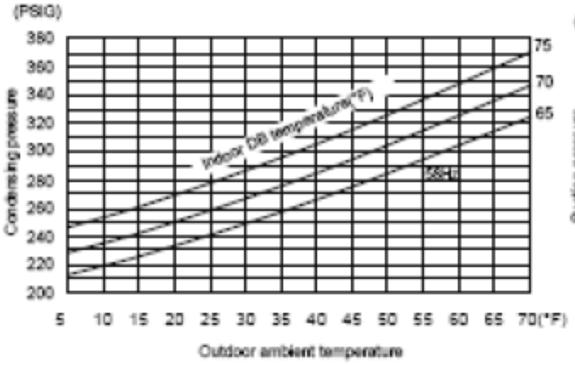
Data is based on the condition of outdoor humidity 75%.
Air flow should be set to High speed.
Data is for heating operation without any frost.

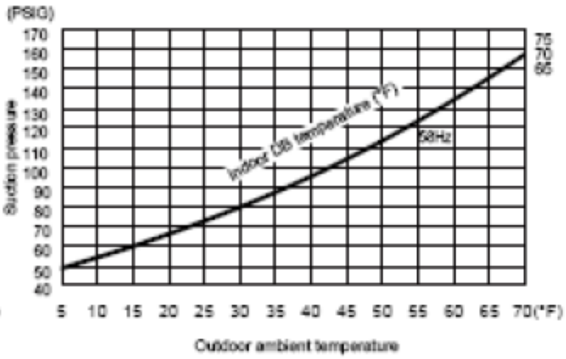
MUZ-A24NA





MU-GA24NA





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2013 P-Series and M-Series - Application Notes (June 2013)
APP-53

MITSUBISHI ELECTRIC
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Application Note 1018:

Mr. Slim Cooling Capacity Correction Factors

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Model	Refrigerant piping length (one way : ft.)		
	25 (std.)	40	65
MS-A09WA MS-A12WA	1.0	0.954	0.878

Model	Refrigerant piping length (one way : ft.)			
	25 (std.)	40	65	100
MSZ-A09/12/15/17NA MSY-A15/17NA	1.0	0.954	0.878	
MSZ-A24NA MSY-A24NA	1.0	0.95	0.878	0.713

Model	Refrigerant piping length (one way : ft.)		
	25 (std.)	40	65
MUZ-FD09NA MUY-FD12NA	1.0	0.954	0.878

Model	Refrigerant piping length (one way : ft.)			
	25 (std.)	40	65	100
MUZ-D30NA MUZ-D36NA MUY-D30NA MUY-D36NA	1.0	0.95	0.878	0.713

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MITSUBISHI ELECTRIC
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Application Note 1019:

M-Series Cooling Performance Data

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1) COOLING CAPACITY

Model	Indoor air IWB (°F)	Outdoor intake air DB temperature (°F)														
		75			85			95			105			115		
		TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC
MS-A09WA	71	11.6	6.4	0.77	10.9	5.9	0.85	10.2	5.6	0.91	9.5	5.2	0.96	8.7	4.8	1.00
	67	11.0	7.5	0.73	10.3	7.0	0.80	9.5	6.5	0.87	8.8	6.0	0.92	8.1	5.5	0.97
	63	10.4	8.4	0.70	9.6	7.8	0.77	8.9	7.3	0.83	8.1	6.6	0.89	7.4	6.0	0.92
MS-A12WA	71	14.7	8.3	0.95	13.7	7.8	1.04	12.9	7.3	1.12	12.0	6.8	1.18	11.0	6.3	1.23
	67	13.9	9.7	0.90	13.0	9.1	0.99	12.0	8.4	1.07	11.2	7.8	1.13	10.3	7.2	1.19
	63	13.1	10.9	0.86	12.1	10.1	0.95	11.3	9.4	1.02	10.3	8.6	1.09	9.4	7.8	1.13

Notes 1. IWB : Intake air wet-bulb temperature.
TC : Total Capacity (x10³ Btu/h), SHC : Sensible Heat Capacity (x10³ Btu/h)
TPC : Total Power Consumption (kW)
2. SHC is based on 80°F of indoor intake air DB temperature.

7-1. PERFORMANCE DATA

1) COOLING CAPACITY

Model	Indoor air IWB (°F)	Outdoor intake air DB temperature (°F)														
		75			85			95			105			115		
		TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC
MUZ-A09NA MUZ-A09NA - U1	71	11.0	6.4	0.61	10.3	5.9	0.67	9.7	5.6	0.72	9.0	5.2	0.76	8.3	4.8	0.79
	67	10.4	7.4	0.58	9.7	6.9	0.64	9.0	6.4	0.69	8.4	5.9	0.73	7.7	5.5	0.77
	63	9.8	8.3	0.55	9.1	7.7	0.61	8.5	7.1	0.66	7.7	6.5	0.70	7.0	5.9	0.73
MUZ-A09NA - 1 MUZ-A09NA - U2	71	11.0	6.4	0.61	10.3	5.9	0.67	9.7	5.6	0.72	9.0	5.2	0.76	8.3	4.8	0.79
	67	10.4	7.4	0.58	9.7	6.9	0.64	9.0	6.4	0.69	8.4	5.9	0.73	7.7	5.5	0.77
	63	9.8	8.3	0.55	9.1	7.7	0.61	8.5	7.1	0.66	7.7	6.5	0.70	7.0	5.9	0.73
MUZ-A12NA	71	14.7	8.5	1.04	13.7	7.9	1.14	12.9	7.4	1.23	12.0	6.9	1.29	11.0	6.4	1.35
	67	13.9	9.9	0.98	13.0	9.2	1.08	12.0	8.5	1.17	11.2	7.9	1.24	10.3	7.3	1.30
	63	13.1	11.0	0.94	12.1	10.2	1.04	11.3	9.5	1.12	10.3	8.7	1.19	9.4	7.9	1.24
MUY-A15NA MUZ-A15NA	71	18.4	9.5	1.50	17.2	8.9	1.65	16.1	8.3	1.77	15.0	7.8	1.87	13.8	7.1	1.94
	67	17.4	11.3	1.42	16.2	10.5	1.56	15.0	9.8	1.69	14.0	9.1	1.79	12.8	8.3	1.88
	63	16.4	12.8	1.35	15.2	11.9	1.50	14.1	11.0	1.61	12.8	10.0	1.72	11.7	9.2	1.79
MUY-A17NA MUZ-A17NA	71	19.8	10.3	1.84	18.5	9.6	2.02	17.4	9.0	2.17	16.2	8.4	2.29	14.9	7.7	2.38
	67	18.8	12.2	1.74	17.5	11.4	1.91	16.2	10.5	2.07	15.1	9.8	2.19	13.9	9.0	2.30
	63	17.7	13.8	1.66	16.4	12.8	1.83	15.2	11.9	1.98	13.9	10.8	2.11	12.6	9.9	2.19
MUY-A24NA MUZ-A24NA	71	27.0	13.4	2.56	25.2	12.5	2.81	23.7	11.7	3.02	22.0	10.9	3.18	20.2	10.1	3.31
	67	25.5	16.1	2.42	23.8	15.0	2.66	22.0	13.9	2.88	20.5	12.9	3.05	18.8	11.9	3.20
	63	24.0	18.3	2.30	22.2	17.0	2.55	20.7	15.8	2.75	18.8	14.4	2.94	17.2	13.1	3.05
MUY-GA24NA MUZ-GA24NA	71	27.0	13.4	2.23	25.2	12.5	2.44	23.7	11.7	2.63	22.0	10.9	2.76	20.2	10.1	2.88
	67	25.5	16.1	2.10	23.8	15.0	2.31	22.0	13.9	2.50	20.5	12.9	2.65	18.8	11.9	2.78
	63	24.0	18.3	2.00	22.2	17.0	2.21	20.7	15.8	2.39	18.8	14.4	2.55	17.2	13.1	2.65

NOTE: 1. IWB: Intake air wet-bulb temperature
TC: Total Capacity (×10³Btu/h)
SHC: Sensible Heat Capacity (×10³Btu/h)
TPC: Total Power Consumption (kW)
2. SHC is based on 80°F of indoor intake air DB temperature.

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2013 P-Series and M-Series - Application Notes (June 2013)
APP-57

1) COOLING CAPACITY

Model	Indoor air IWB (°F)	Outdoor intake air DB temperature (°F)														
		75			85			95			105			115		
		TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC
MUZ-D30NA	71	37.6	19.1	3.43	35.2	17.8	3.75	33.0	16.7	4.04	30.7	15.6	4.25	28.2	14.3	4.43
	67	35.6	22.8	3.23	33.2	21.2	3.56	30.7	19.6	3.85	28.6	18.3	4.08	26.2	16.8	4.27
	63	33.5	25.9	3.08	31.0	24.0	3.41	28.9	22.3	3.68	26.2	20.3	3.93	23.9	18.5	4.08
MUZ-D36NA	71	40.7	19.8	3.88	38.0	18.5	4.25	35.7	17.4	4.58	33.2	16.2	4.82	30.5	14.9	5.01
	67	38.5	23.9	3.66	35.9	22.2	4.03	33.2	20.6	4.36	30.9	19.1	4.62	28.4	17.6	4.84
	63	36.2	27.3	3.49	33.5	25.3	3.86	31.2	23.5	4.16	28.4	21.4	4.45	25.9	19.5	4.62
MUY-D30NA	71	37.6	19.1	3.01	35.2	17.8	3.30	33.0	16.7	3.55	30.7	15.6	3.73	28.2	14.3	3.89
	67	35.6	22.8	2.84	33.2	21.2	3.13	30.7	19.6	3.38	28.6	18.3	3.58	26.2	16.8	3.75
	63	33.5	25.9	2.70	31.0	24.0	2.99	28.9	22.3	3.23	26.2	20.3	3.45	23.9	18.5	3.58
MUY-D36NA (208 V)	71	40.7	19.8	3.75	38.0	18.5	4.10	35.7	17.4	4.42	33.2	16.2	4.65	30.5	14.9	4.84
	67	38.5	23.9	3.54	35.9	22.2	3.89	33.2	20.6	4.21	30.9	19.1	4.46	28.4	17.6	4.67
	63	36.2	27.3	3.37	33.5	25.3	3.73	31.2	23.5	4.02	28.4	21.4	4.29	25.9	19.5	4.46
MUY-D36NA (230 V)	71	42.4	20.6	3.77	39.6	19.3	4.13	37.2	18.1	4.45	34.6	16.8	4.69	31.8	15.5	4.88
	67	40.1	24.9	3.56	37.4	23.2	3.92	34.6	21.5	4.24	32.2	20.0	4.49	29.6	18.3	4.71
	63	37.7	28.4	3.39	34.9	26.3	3.75	32.5	24.5	4.05	29.6	22.3	4.32	27.0	20.3	4.49

NOTE: 1. IWB : Intake air wet-bulb temperature
TC : Total Capacity (x10^{3}Btu/h)
SHC : Sensible Heat Capacity (x10^{3}Btu/h)
TPC : Total Power Consumption (kW)
2. SHC is based on 80°F of indoor Intake air DB temperature.

1) COOLING CAPACITY

Model	Indoor air IWB (°F)	Outdoor intake air DB temperature (°F)														
		75			85			95			105			115		
		TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC	TC	SHC	TPC
MUZ-FD09NA	71	11.0	6.9	0.58	10.3	6.5	0.63	9.7	6.1	0.68	9.0	5.6	0.72	8.3	5.2	0.75
	67	10.4	7.9	0.55	9.7	7.4	0.60	9.0	6.8	0.65	8.4	6.4	0.69	7.7	5.8	0.72
	63	9.8	8.8	0.52	9.1	8.1	0.58	8.5	7.6	0.62	7.7	6.9	0.66	7.0	6.3	0.69
MUZ-FD12NA	71	14.7	8.8	0.85	13.7	8.2	0.94	12.9	7.7	1.01	12.0	7.2	1.06	11.0	6.6	1.10
	67	13.9	10.2	0.81	13.0	9.5	0.89	12.0	8.8	0.96	11.2	8.1	1.02	10.3	7.5	1.07
	63	13.1	11.3	0.77	12.1	10.5	0.85	11.3	9.7	0.92	10.3	8.9	0.98	9.4	8.1	1.02

NOTE: 1. IWB : Intake air wet-bulb temperature
TC : Total Capacity (x10^{3}Btu/h)
SHC : Sensible Heat Capacity (x10^{3}Btu/h)
TPC : Total Power Consumption (kW)
2. SHC is based on 80°F of indoor Intake air DB temperature.

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Application Note 1020:

M Series Outdoor Unit Clearances

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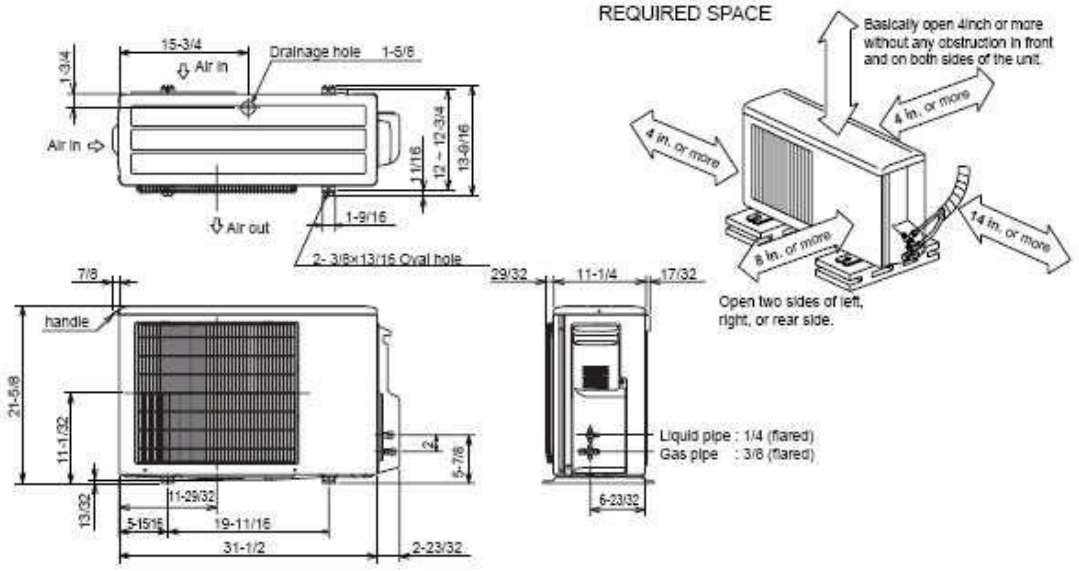
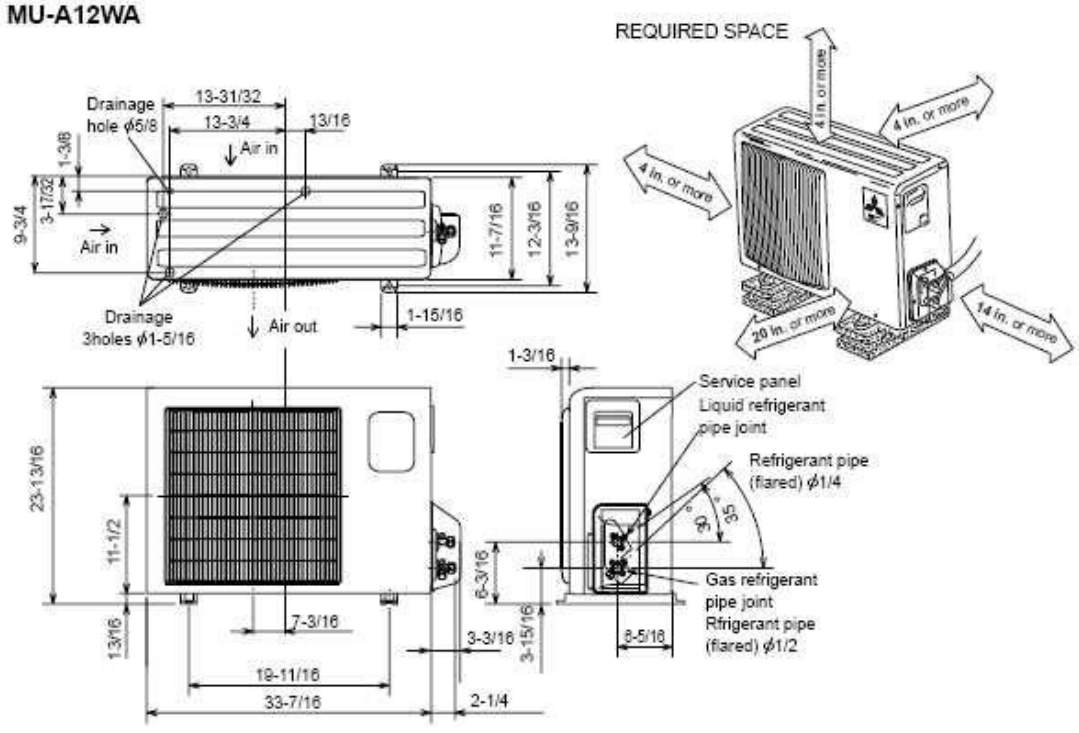
4 OUTLINES AND DIMENSIONS

MU-A09WA

Unit : inch



MU-A12WA



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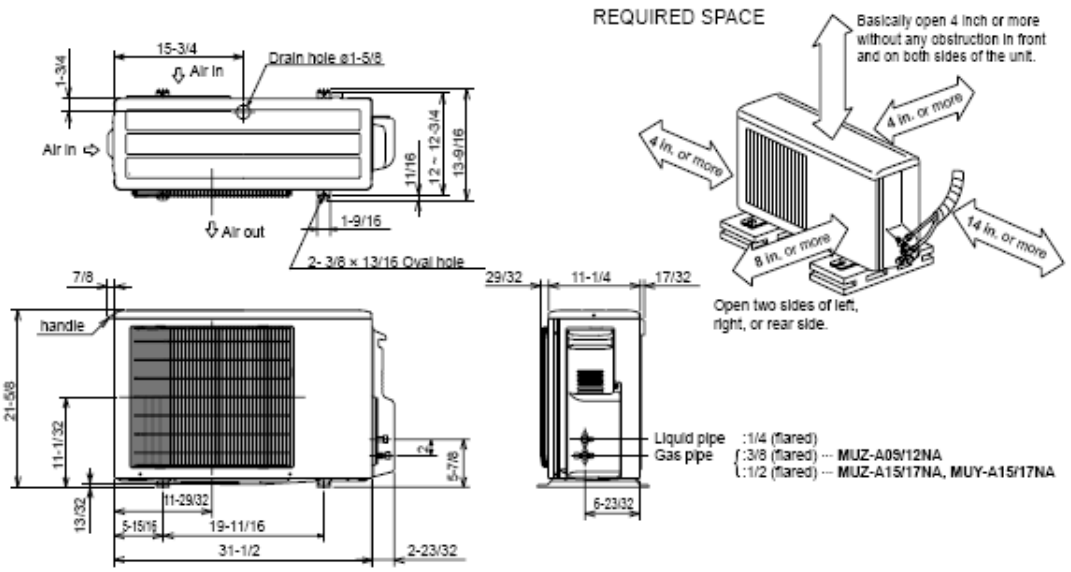
2013 P-Series and M-Series - Application Notes (June 2013)
APP-60

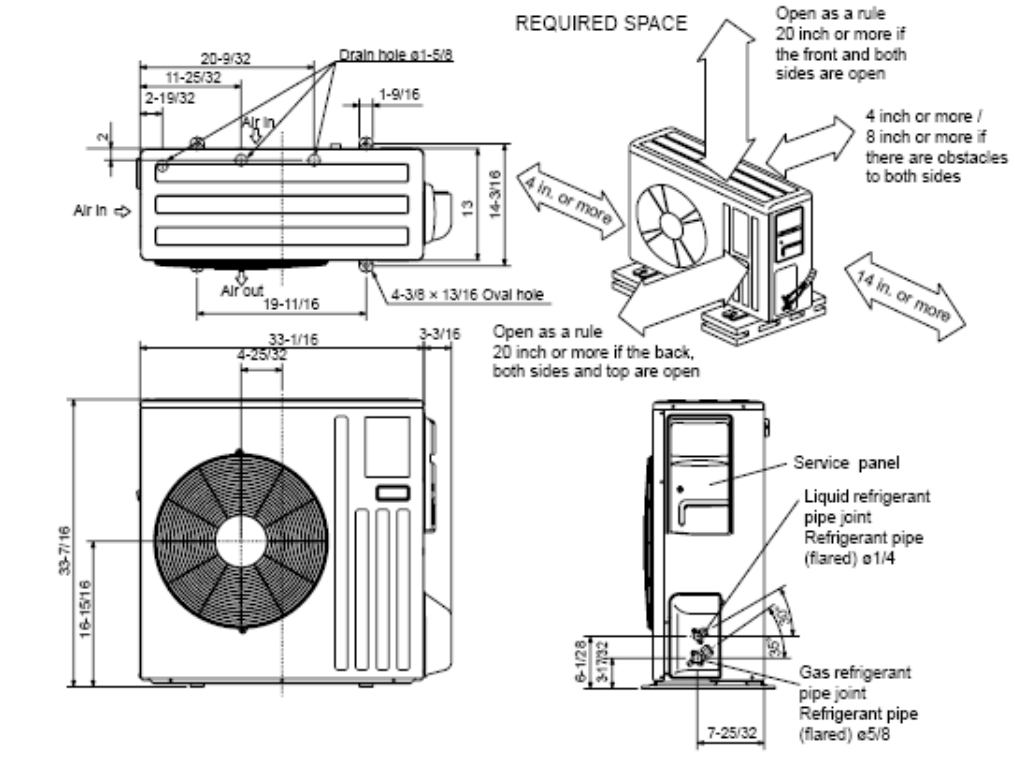
4 OUTLINES AND DIMENSIONS

MUZ-A09NA MUZ-A12NA MUZ-A15NA MUZ-A17NA MUY-A15NA MUY-A17NA

Unit: inch



MUZ-A24NA MUY-A24NA MUZ-GA24NA MUY-GA24NA



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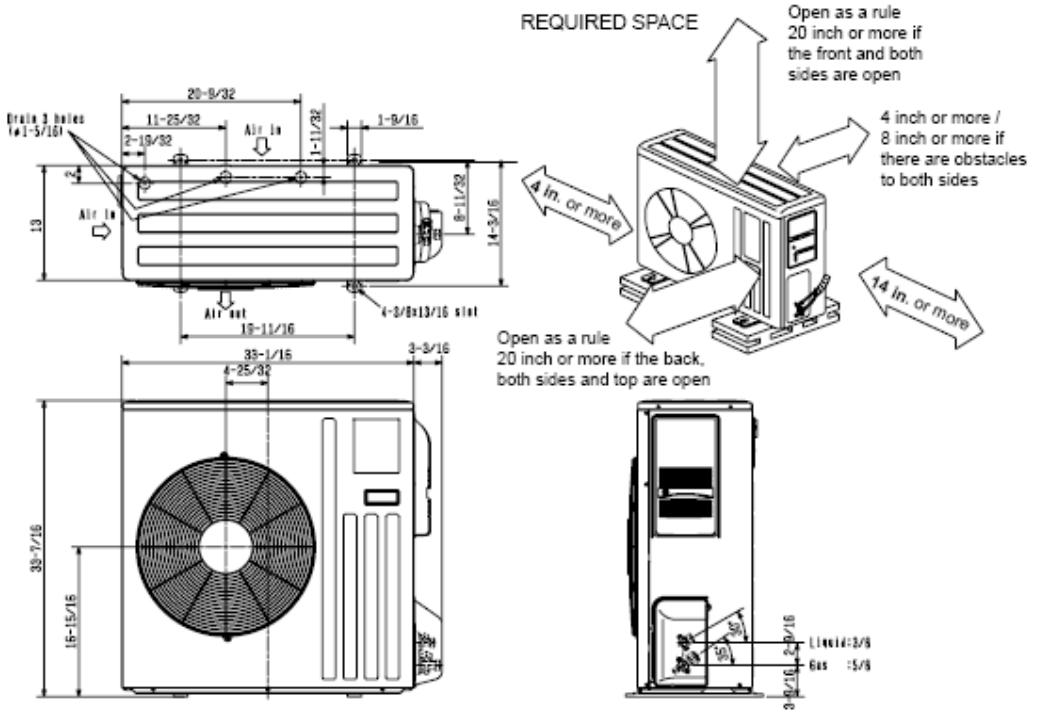
4 OUTLINES AND DIMENSIONS

MUZ-D30NA MUZ-D36NA MUY-D30NA MUY-D36NA

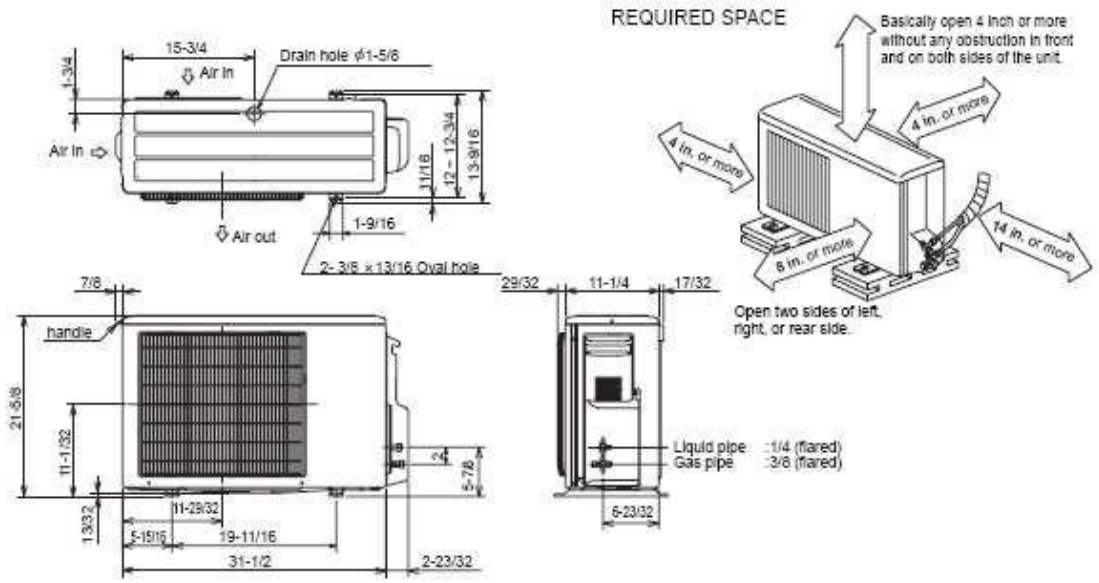
Unit: inch



4 OUTLINES AND DIMENSIONS

MUZ-FD09NA MUZ-FD12NA

Unit: inch



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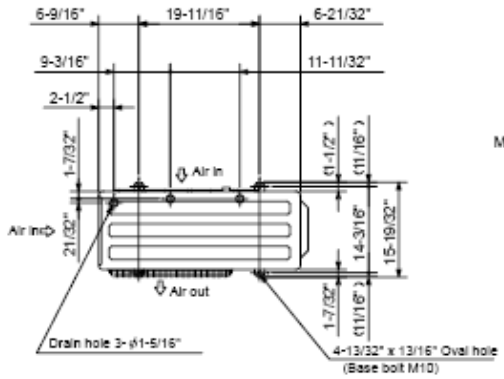
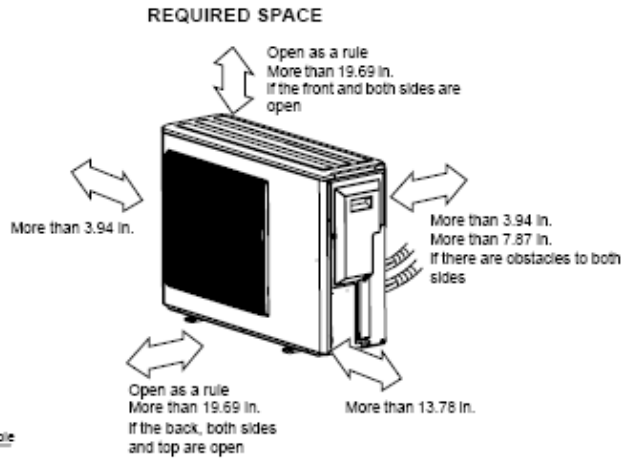
2013 P-Series and M-Series - Application Notes (June 2013)
APP-62

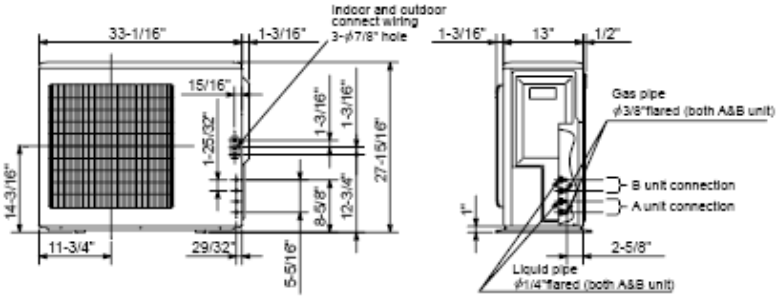
6 OUTLINES AND DIMENSIONS

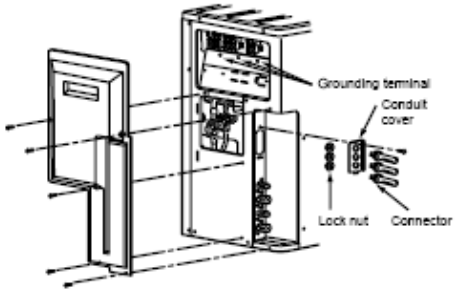
MXZ-2A20NA MXZ-2A20NA - 1

Unit: inch




REQUIRED SPACE
Open as a rule
More than 19.69 in.
If the front and both sides are open
More than 3.94 in.
More than 3.94 in.
More than 7.87 in.
If there are obstacles to both sides
Open as a rule
More than 19.69 in.
If the back, both sides and top are open
More than 13.78 in.





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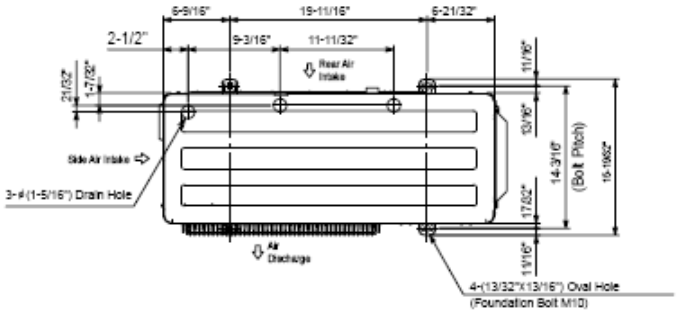
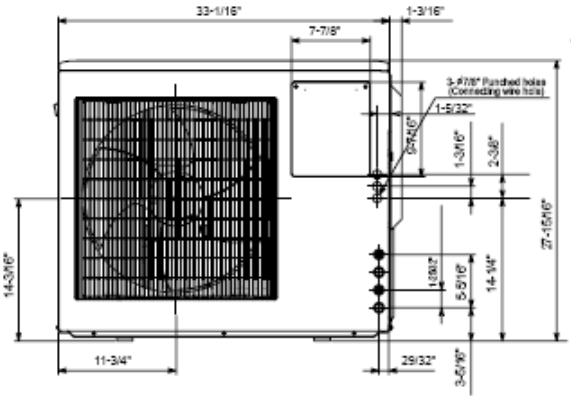
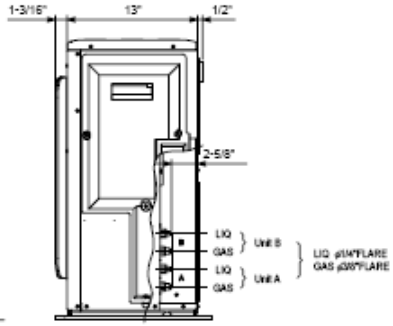
2013 P-Series and M-Series - Application Notes (June 2013)
APP-63

MXZ-2A20NA - 2

Unit: inch

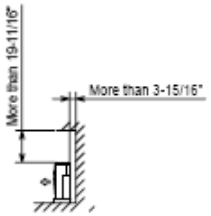




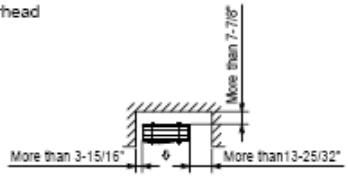


1.Installation space

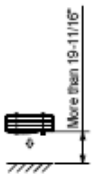
Note : Leave front and both sides clearance fully.

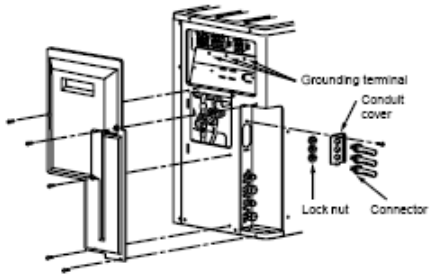


Note : Leave front and overhead clearance fully.



Note : Leave rear, overhead and both sides clearance fully.





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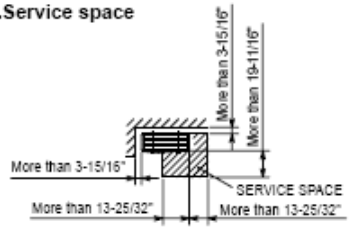

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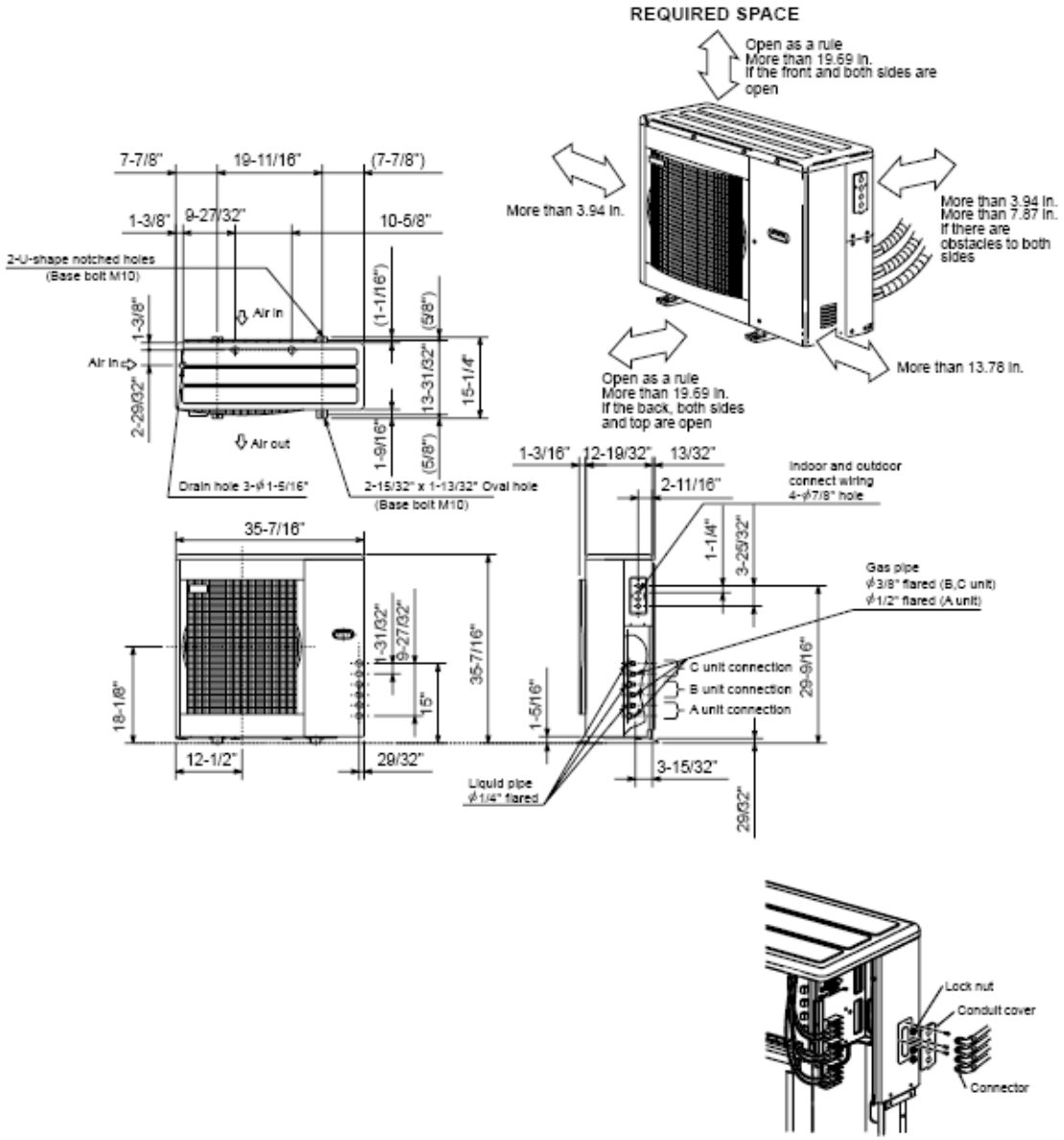
MXZ-3A30NA

Unit: inch



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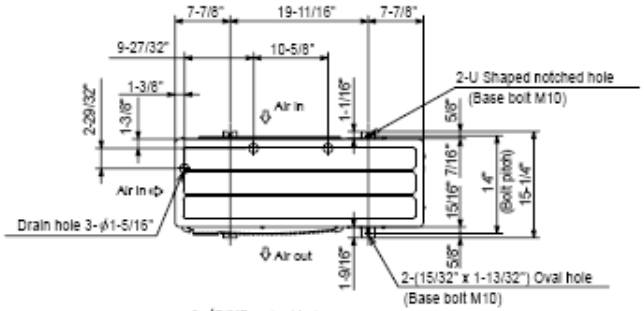
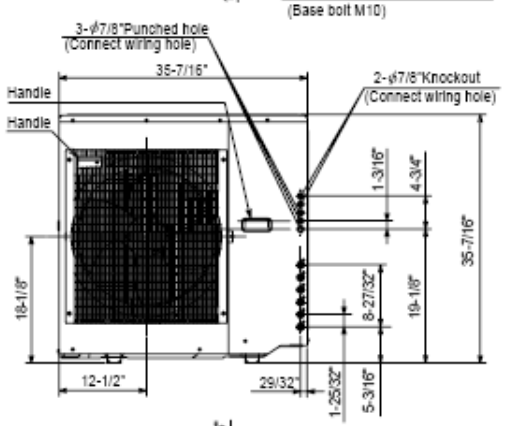
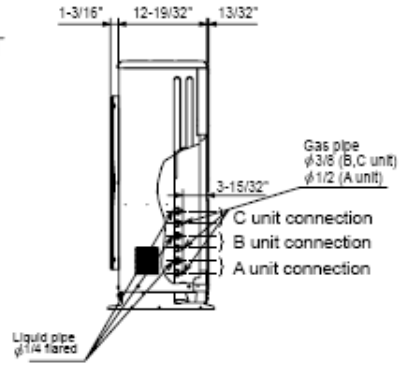
MXZ-3A30NA - 1

Unit: inch







1.Installation space

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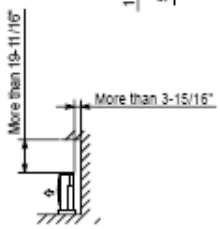

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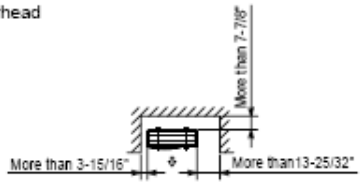
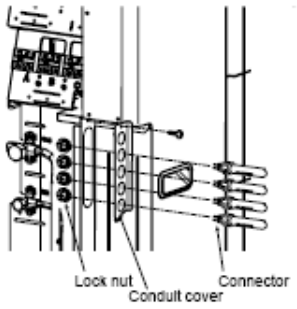


Note : Leave rear, overhead and both sides clearance fully.



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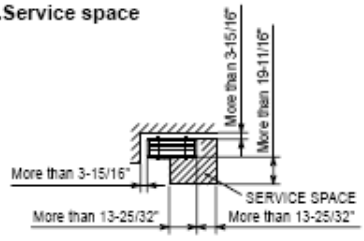

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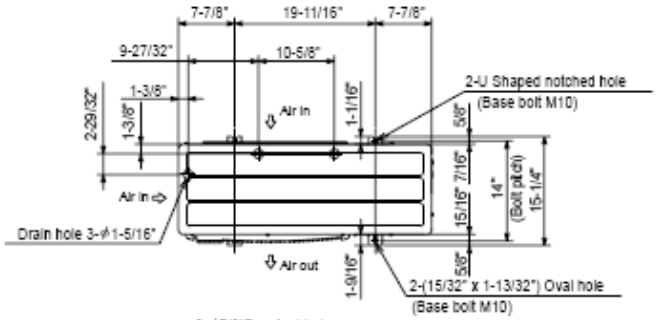
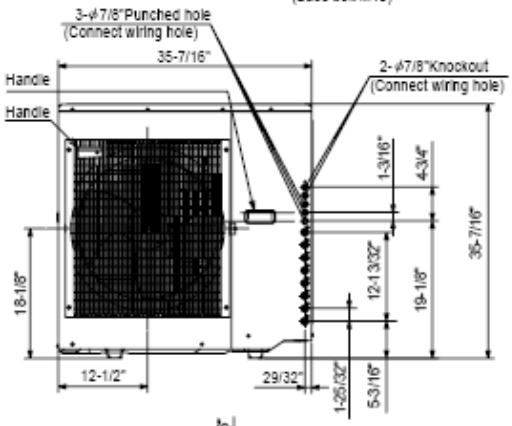
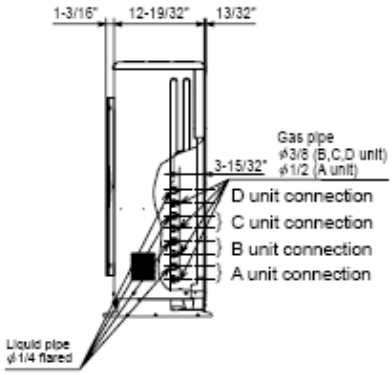
MXZ-4A36NA

Unit: inch







1.Installation space

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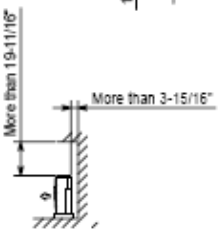

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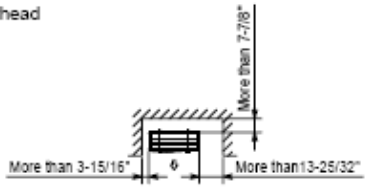
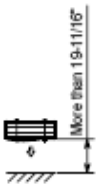
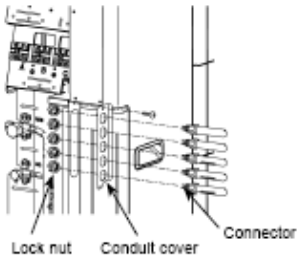


Note : Leave rear, overhead and both sides clearance fully.





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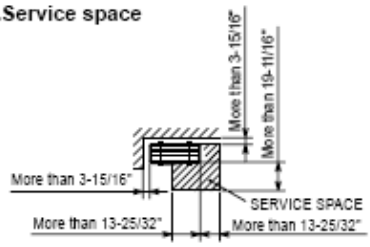

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2013 P-Series and M-Series - Application Notes (June 2013)
APP-67

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Application Note 1021:

M&P Series High Altitude Applications

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When air conditioners and heat pumps are installed in areas above sea level, capacity is reduced due to decreased air density. Equipment size must be increased to meet the load requirements. The following correction factors apply to CITY MULTI and Mr. Slim air conditioners and heat pumps for both heating and cooling operation. The indoor and outdoor units need to be sized based on the capacity reduction due to the decreased air density.

Examples:

Air-Source System

An air-source system installed at 5,000 feet above sea level would operate at 83% its normal capacity when compared to its performance at sea level. Therefore, the indoor unit(s) and outdoor unit(s) need to have at least 17% higher capacity to provide the same cooling and heating performance as the units would at sea level conditions.

Water-Source System

With a water-source system installed at 5,000 feet above sea level, the indoor units would operate at 83% their normal capacity when compared to their performance at sea level. Therefore, the indoor unit(s) would need to have at least 17% higher capacity to provide the same cooling and heating performance as the units would at sea level conditions. The water-source units can be sized based on their standard capacity at sea level. However, depending on the indoor units selected, the size of the outdoor unit may have to be increased to meet the maximum connected capacity requirement. The maximum connected capacity for PQHY Series is 130%; the maximum connected capacity for PQRY Series is 150%. Table 1 lists the capacity correction factors.

Table 1. Capacity Correction Factors

Altitude Feet Above Sea Level	Air-Source Systems		Water Source Systems	
	Indoor Unit	Outdoor Unit	Indoor Unit	Water-Source Unit
0	1.00	1.00	1.00	1.00
1000	0.96	0.96	0.96	1.00
2000	0.93	0.93	0.93	1.00
3000	0.90	0.90	0.90	1.00
4000	0.86	0.86	0.86	1.00
5000	0.83	0.83	0.83	1.00
6000	0.80	0.80	0.80	1.00
7000	0.77	0.77	0.77	1.00
8000	0.74	0.74	0.74	1.00
9000	0.71	0.71	0.71	1.00
10000	0.69	0.69	0.69	1.00

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2013 P-Series and M-Series - Application Notes (June 2013)
APP-69

Adjusting equipment size for high-altitude applications is not supported by Design Tool software, so correction factors must be performed manually. No other adjustments are necessary in the system design and application.

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Application Note 1022:

Regarding Refrigerant Accessories

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August 21, 2006

MEMO: Refrigerant Accessories

Please be advised that we do not recommend the following accessories on our ductless air conditioners or heat pump units.

Filter Driers: Our units are made in the factory under clean conditions and are brazed using dry nitrogen. They are charged with clean oil and new refrigerant. When the line sets are attached using flare connections the copper is clean. Under clean conditions filter driers are not necessary and will only cause pressure drops in the system.

Sight Glasses: The outdoor unit contains the metering device. The purpose of a sight glass is to check the condition of the liquid refrigerant prior to metering device. Since sight glasses are placed prior to the metering device at the indoor the sight glass would be useless and only create a pressure drop in the lines.

Traps: Traps create pressure drops in our systems. They are commonly used to help in oil return to the compressor. Since the velocity of the refrigerant is greater when the metering device is placed in the outdoor unit oil return is not a problem. If a trap is not preventable, it must be a minimum of twelve inches in length.

Albert R. Blyler
Senior Application Specialist
Mitsubishi HVAC

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Application Note 1023:

P-Series Indoor Fan Cycle Off

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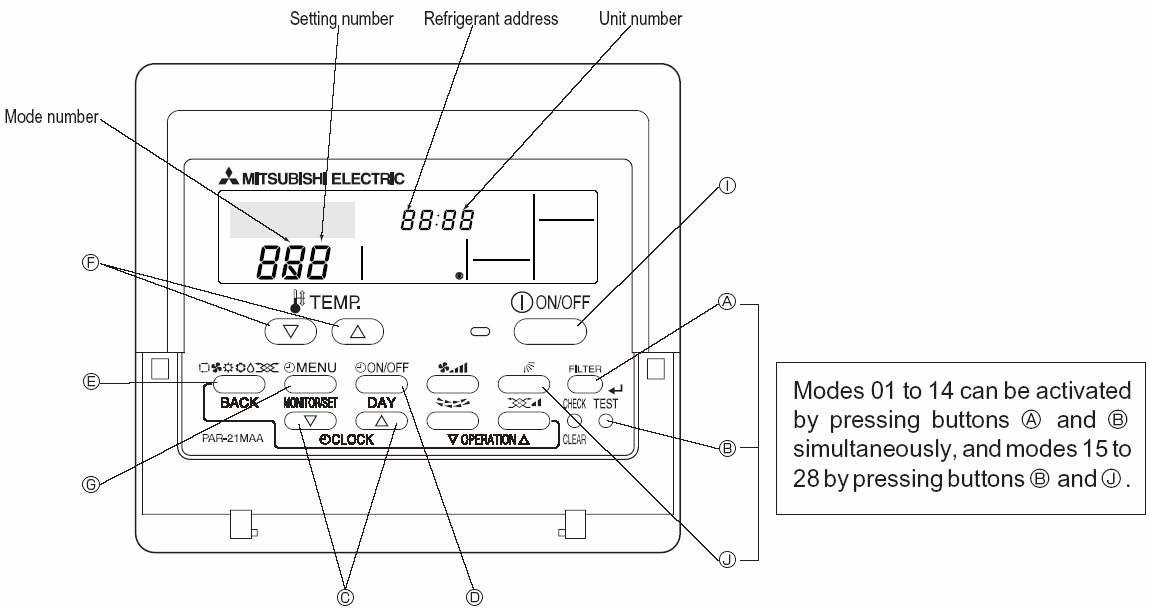

Figure 1: R410A P-Series Indoor Fan Cycle Off in Heat or Cool Mode with PAR-21MAA Controller

Here are the 5 Steps to setting up the PAR-21MAA Controller displayed in Figure 1:

1. Press the airflow up/down (J) button and test (B) button at the same time for two seconds

2. Wait for a few seconds until the small dashes start to flash then press the clock (C) buttons to change refrigerant address to 00 then press the clock on/off (D) button then the clock (C) buttons to change unit number to 01

3. Press the back (E) button then wait for a few seconds until the big dashes start to flash then press the temperature up/down (F) button to change mode number to 25 for heating then the menu (G) button then the temperature up/down (F) button to change the setting number to 2 then press the back (E) button until the number stop flashing now it is set

4. Press the back (E) button then wait for a few seconds until the big dashes start to flash then press the temperature up/down (F) button to change mode number to 27 for cooling then the menu (G) button then the temperature up/down (F) button to change the setting number to 2 then press the back (E) button until the number stop flashing now it is set

5. Press the airflow up/down (J) button and test (B) button at the same time for two seconds to get back to normal display

Note: Use of the PAR-21MAA controller with M-series units for fan cycling is not applicable.

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Application Note 1024:

Supplemental Heat Control

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The P-Series, SEZ and SLZ indoor units, when installed with MXZ, PUZ or SUZ heat pump outdoor units, can interface and enable supplemental and auxiliary heat sources using an indoor board connector (CN-24 or CN-152, depending on indoor unit). For indoor units connected to PUY outdoor units, external heat control does not function. *(Please note that at this time M-Series indoor units (MS/MSZ/MFZ) do NOT support any supplemental heat control or interface capabilities. If supplemental heat control is required, please provide alternate options).*

Supplemental or auxiliary heat should be sized and selected by the contractor or engineer to provide the necessary capacity to maintain expected comfort in all reasonable low temperature conditions. Any heat source must also be equipped with all required control, safety, and operational devices needed for proper and safe operation. Check your local, state, and federal codes.

Table 1 summarizes which style of indoor unit has either a CN-24 or CN-152 connector to interface with supplemental heat sources.

Table 1. Indoor Unit Models Requiring CN-24 or CN-152 Connector

Applicable Indoor Unit Model	Connector	Requires Part #

PLA-A**BA4 (Ceiling-recessed)
PCA-A**KA4 (Ceiling-suspended)
SLZ-KA**NA (Ceiling-recessed)
PEA(D)-A**AA4 (Ducted)
SEZ-KD**NA4 (Ducted)
	CN-24	CN24-Relay-Kit-CM3 which includes:
		• Connector with wiring lead
		  ○ Colored wires with spade connectors
		  ○ Kit covers both sizes of CN-24 plugs
		• 12 VDC Relay
		• CN22/CN4Y fan speed jumper

PKA-A**HA4 and PKA-A**KA4 (Wall Mounted)	CN-152	PAC-SE59RA-E which includes: • Connector with wiring lead • Box contains connector for CN-152 which is a 10-pin Molex type with a 2m 2-conductor wire attached to pins 1 & 2 Also need CN24-Relay-Kit-CM3

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Supplemental Heat Control via CN-24 for PLA, PCA and SLZ Indoor Units

CN-24 controls are indicated in Figure 1and require no setup at the remote controller. This function is only available in heating operation.

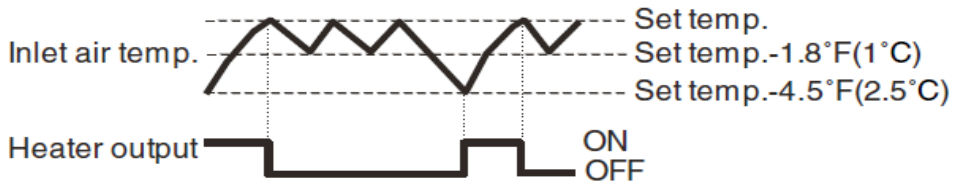

Figure 1. CN-24 controls

Figure 2 illustrates a typical wiring diagram for PLA, PCA and SLZ indoor units using CN-24:

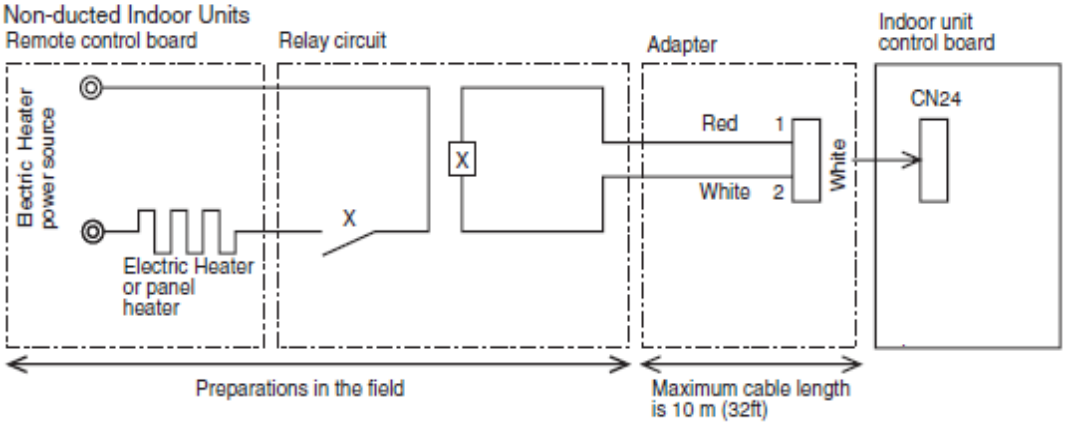

Figure 2. Wiring Diagram for PLA, PCA and SLZ Indoor Units using CN-24

Supplemental Heat Control via CN-24 for PEA (D) and SEZ Indoor Units

CN-24 controls are indicated in Figure 1 and require no setup at the remote controller. This function is only available in heating operation. This default operation is highly recommended.

If desired, the dead-band to energize supplemental heat can be tightened to 1.8° F via remote controller settings. Note: This setting will result in the supplemental heat always being energized any time the indoor unit is actively heating. Via the MHK1 Wireless Remote Controller, enter the Installer Setup Menu and select Setup Function 123 and select setting #2; From the PAR-21MAAU Wired Remote Controller select mode 23 and select setting #2. *(Controller manuals currently do not label this action for this function)*.

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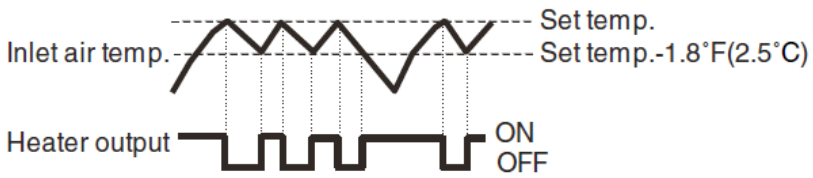

Figure 3. CN4YControls

Selecting setting #2 for Setup Function 123 on MHK1 (or Mode 23 on PAR-21MAAU) allows Setup Function 125 on MHK1 (or Mode 25 on PAR21MAA) and CN4Y to be used to control the indoor unit fan during defrost and error conditions as shown in Figure 3. Table 2 and 3 lists the settings to be used to achieve the fan operation desired.

Table 2. Fan Operation Settings Depending on Supplemental Heat Location

	Heater Installed in Duct	No heater installed in Duct
Use of CN4Y	Unused	Used
Heater is off	Fan ON	Fan OFF
Heater is on	Fan ON	Fan OFF

Table 3.Controller Settings for Fan Operation

Mode	**Indoor Unit Fan Operation**		Setup function for MHK1 (PAR-21)	Setting	Mode no. MHK1 (PAR-21)	Setting	Controller Initial setting
	Heating Thermo - OFF	[DEFROST] or [ERROR]					
Fan control	Very low	Very low	123 (23)	2	125 (25)	1	O
	Stop	Remote controller setting	123 (23)	2	125 (25)	2	·
	Remote controller setting	Remote controller setting	123 (23)	2	125 (25)	3	·

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Figure 4 illustrates a typical wiring diagram for PEA(D) and SEZ indoor units using CN-24:

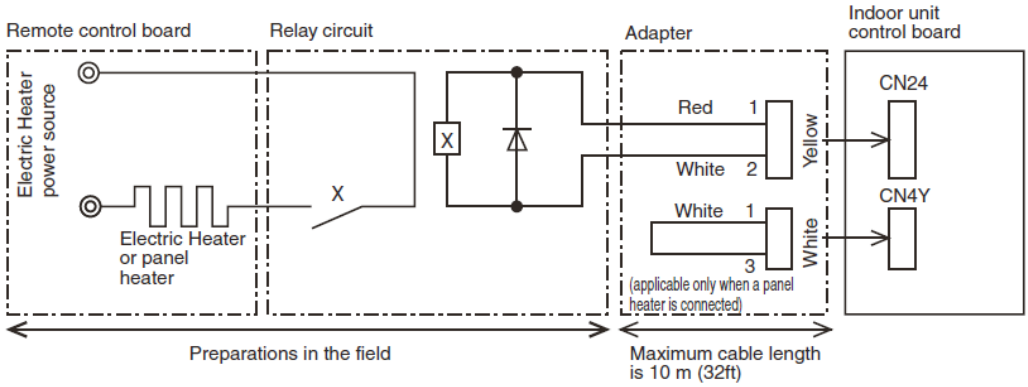

Figure 4. Wiring Diagram for PEA(D) and SEZ indoor units

Supplemental Heat Control via CN-152 for PKA Wall-mounted Indoor Units

CN-152 controls are indicated in Figure 5 and require no setup at remote controller. This function is only available in heating operation.

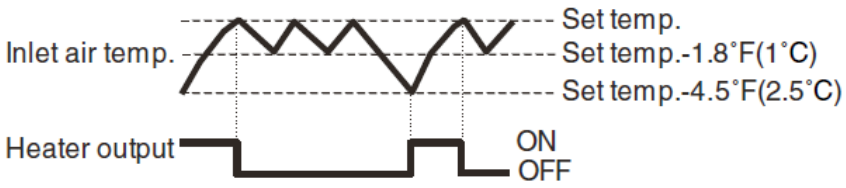

Figure 5. CN-152 Controls

Figure 6 illustrates a typical wiring diagram for PKA wall-mounted indoor unit using CN-152.

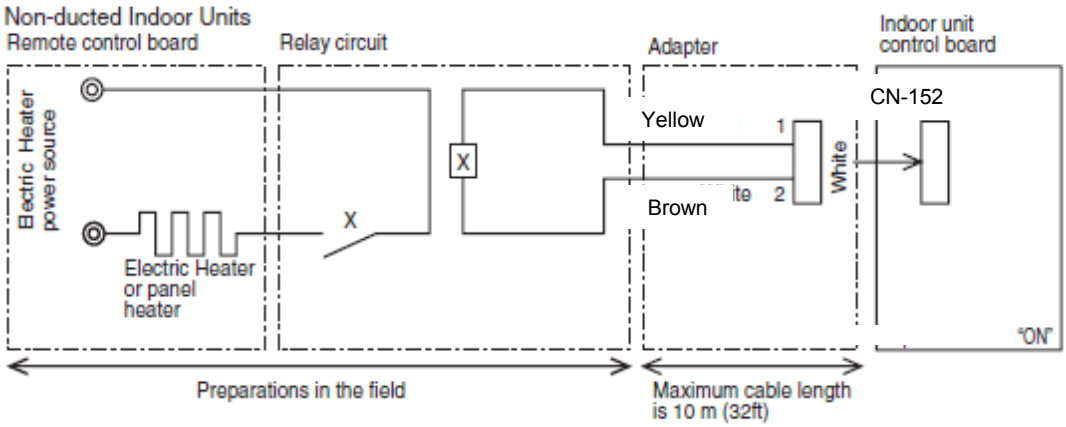

Figure 6. Wiring Diagram for PKA Wall-Mounted Indoor Unit

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Wiring restrictions for ALL field wiring in all of the above diagrams:

- Keep the length of the cable connecting to the circuit board of the indoor unit shorter than 32 ft. (10 meters).
- Wire size should be 22 ~ 16 AWG (0.5 mm2 ~ 1.25 mm2) depending on length and conditions.
- All wiring should conform to all local codes and the National Electric Code where applicable.

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APPLICATION NOTES

MITSUBISHI ELECTRIC
COOLING & HEATING
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Application Note 1025:

No Simultaneous Heating and Cooling with MXZ

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Multi-zone (MXZ) heat pump systems can connect two or more indoor units with one outdoor unit. Be advised that multi-zone systems with model numbers that begin with MXZ **do not** support simultaneous heating and cooling. All indoor units on these type models must all be in the same mode at the same time: either cooling or heating. The entire system will have a mode; individual indoor units set to the opposite mode will be in standby.

System Mode

The mode of all of the indoor units is determined by the mode of the outdoor unit. The mode of the outdoor unit is determined by the indoor unit that was operating first. Indoor units set to the mode opposite of the outdoor unit cannot operate, and the operation indicator lamp flashes to indicate standby.

Example 1

Consider an MXZ system with two indoor units, IDU-1 and IDU-2, both of which are initially set to cooling mode. IDU-1 is switched to heating mode. The outdoor unit will continue to operate in cooling mode until the IDU-2 is switched to heating mode. IDU-2 will still receive cooling to the space, but the IDU-1 will not receive heating to the space. Instead, the remote controller for IDU-1 will indicate standby mode, or indicator light on the unit will flash, depending on the model. When IDU-2 is switched to heating mode, the outdoor unit will switch to heat mode, and both indoor units will receive heating to the space.

Example 2

Consider an MXZ system with five indoor units, IDU-1, 2, 3, 4,and 5, which are initially in heating mode. IDU-1, 2, and 3 are switched to cooling mode. The outdoor unit will continue to stay in heating mode, and IDU-1, 2, and 3 will be in standby. The IDU-1, 2, and 3 will not receive cooling until IDU-4 and 5 are switched to cooling mode.

IDU-4 is then switched to cooling mode. The outdoor unit will continue to be in heating mode because that was the last mode in which all indoor units were in the same mode.

When IDU-5 is switched to cooling mode, the outdoor unit will finally switch to cool mode, and all five indoor units will receive cooling to the space.

Forcing System Changeover

A forced changeover can be achieved by changing all indoor units to the desired mode.

Auto-Mode

Indoor units connected to an MXZ system have three mode options: cool, heat, and auto. It is recommended that only heat mode and cool mode be used, and not auto mode. Auto mode is designed for indoor units on one-to-one systems or a VRF simultaneous cooling and heating systems. Because all of the indoor units on multi-zone MXZ systems must be in the same

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mode, having auto mode enabled on the connected indoor units does not guarantee that the system will switch modes when an indoor unit switches modes. Therefore, auto mode does not work as users expect on a multi-zone system, and is not recommended.

Simultaneous Heating and Cooling

For applications that require simultaneous heating and cooling, Mitsubishi Electric Cooling & Heating offers two options:

1. For smaller applications, multiple one-to-one single-zone systems.
2. For larger applications, CITY MULTI R2-Series systems. R2-Series systems provide simultaneous heating and cooling for up to 50 indoor units connected to one outdoor unit.

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